CODING A NEW CURRICULUM ★ A SUSTAINABLE CITY ON HOLD ★ FORGING A US RESURGENCE

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ISSUE 97

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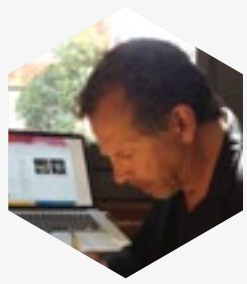

Q&A
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REHASHED
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TIME MACHINES
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On the Cover:
Illustration by Ed Nacional for Distro

MORE THAN A POINT RELEASE

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EDITOR'S LETTER

This week is Microsoft's time to shine. Its Build conference, typically held later in the year, kicked off on Wednesday and along with it came a lot more about Windows 8.1 — which we thought we already knew plenty about, honestly. But there was more to learn, including a new milestone for the Windows Store: 100,000 apps. Well, *almost* 100,000 apps. Steve Ballmer said the store was "approaching" that number and has racked up "hundreds of millions" of downloads. A bit of a far cry from Apple's 50 billion, but hey, it's early days yet.

More interesting to me is the inclusion of native 3D-printing support in Windows 8.1. Good 'ol 2D printers were certainly common before the traditional driver came into standard practice, but that market didn't really take off until they effectively became plug and play. One could say it's perhaps a bit early for that kind of native support to be needed in Windows for a 3D printer, but better too soon than too late.

The new, high-def Kinect for Xbox One was confirmed for a Windows release, with early developer kits costing $400. The systems won't be readily available for PCs until next year, but overeager devs can apply now to get one before 2013 is through. Microsoft also showed off some optical character recognition support in Windows, enabling the OS to read aloud and even translate text captured through a camera.

And then there was IE. Microsoft talked at length about the 11th iteration of Internet Explorer, particularly about the standards it supports — standards, interestingly, that previous versions of the browser patently ignored. WebGL is one of those, along with MPEG-DASH and, perhaps most interestingly, there's support for Netflix's HTML5 version. Netflix has been working hard to transition its streaming services away from Microsoft's now-shuttered Silverlight technology, a competitor to Flash that has been more or less obviated by the latest HTML spec. And, if all that weren't enough, MS confirmed IE11 would indeed be making an appearance on Windows 7. Eventually.

Some good news on the Windows Phone front, too, with Sprint finally getting in the ballgame with not one, but two passably good-looking phones. First is the ATIV S Neo from Samsung,

EDITOR'S LETTER

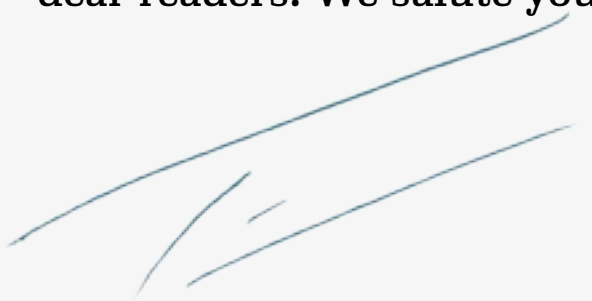
"Microsoft also showed off some optical character recognition support in Windows, enabling the OS to read aloud and even translate text."

a 4.8-inch, 720p device with a 1.4GHz dual-core chip. No mention of internal storage, but it does have a microSD slot. As does the new HTC 8XT, a 4.3-inch WVGA (boo) phone with a mere 8GB of internal storage to start. That guy will set you back $50 after contract and rebate, while the Samsung is a rather more dear $150.

Samsung priced up the Galaxy Tab 3 for a US release this week. The refreshed tablets have physical styling to bring them more in line with the look of the Galaxy S 4 and some of the same software enhancements. The series starts with the $199 7-inch model. The 8-incher is $299 and the 10.1 is $399. None are exactly powerhouses when it comes to specs, but they do at least all have IR blasters for controlling your television, potentially making couch surfing an even more relaxing experience.

Finally, Barnes & Noble had a tough quarter, posting a $119 million loss on starkly declining revenues across its device and content sales. To try and make things right, the company is effectively shrugging off its tablet business, partnering with an as-of-yet unnamed third party who will handle the manufacturing. B&N will continue to make Nook readers, however, which is good, as we're generally quite fond of the things.

In this week's Distro we're getting a little patriotic for our Made in the USA issue. Darren Murph takes you on a tour of an attempted smart city in Florida that sadly got postponed due to a tired economy and some complicated politics. Brian Heater visits non-profit Code.org, which is trying to plug the STEM gap and Jamie Rigg takes a deep dive on why companies like Google and Apple are choosing to manufacture products here. Theoretical physicist Michio Kaku talks about the impending doom of a lack of talent in Silicon Valley. Ross Rubin discusses the merits of an American-made Mac Pro in Switched On, while Josh Fruhlinger takes a nostalgic look at radio in Modem World. And, if that weren't enough, Adobe's VP of Experience Design Michael Gough does Q&A. Read on, dear readers. We salute you. D



TIM STEVENS
EDITOR-IN-CHIEF,
ENGADGET

PATENT POWER, ROBOT RADIO AND THE NERDS UNDER THE STAIRS

Touch article names to read full threads

PRIMESENSE: LIFE AFTER KINECT
ISSUE 96, JUNE 21ST, 2013

"This technology definitely has a future. I'm just not convinced his startup will be the one leading the way. I think this technology will wind up being aped by lots of giant corporations and eventually, when they go out of business, someone will buy up the leftovers for the patents. It's just the way things work nowadays. Patents are the key commodity and theirs are going to be valuable post-mashing-by-giant-conglomerate."

—HISDIVINEORDER

"So they are creating technology that can think and know who you are and can always see you. Sounds like Skynet..."

—ABERMEO

MICROSOFT BACKTRACKS, BUT IS IT TOO LATE?
ISSUE 96, JUNE 21ST, 2013

"I still think MS should have just stayed the course. Of course there was going to be backlash at first, but once gamers realized that this was the new status quo they would eventually accept it and move on. Xbox One-gate really is no different than what happened on the PCs with *HL2* and Steam almost 10 years ago. When *HL2* was released and it required that we use Steam and connect our PCs to the Internet and dial in to Valve periodically, there was HUGE backlash from the PC gaming community. But guess

what? All that anger and panic ended up being for nothing, PC gamers accepted it, Steam is still here and almost any PC gamer today will say that the PC gaming landscape is all the better for it. The console market was on the cusp of making a similar transition, but now we are back to feeling like we are still stuck in the 1990s..."

— OTAKUON

"I think Microsoft could have just said, 'If you want these next-gen features (sharing digital games, no disc for gameplay, etc) then you need to connect online every 24 hours to validate your games. If not, discs will function as they normally do and you would need a copy in the system to be able to play them.' Personally, I think MS could have won over gamers if they would have marketed this right (better games can be made if publishers expect more money coming back to them, and not to third party sellers like GameStop) and they could have online persistent worlds even without connecting everyday. Personally I think Steam has the best distribution model; day one digital releases, quarterly sales so that you just have to wait a couple of months for a game to be cheaper, most of the profits go to the game makers themselves and pirates have no excuse not to buy games. Others should follow their model."

— TENJINO5

WHAT INTERNET RADIO NEEDS TO DISRUPT ACTUAL RADIO

ISSUE 96,
JUNE 21ST, 2013

"Internet radio just has to wait, terrestrial radio is in the process of committing suicide. Most stations are now automated soulless shells that spit out the same top 30 songs in whatever category they claim to cover."

— SHAUNTHESHEEP

"I like live online stations. I would rather actual people choose my music rather than a computer."

— RAVECAVERADIO

HUAWEI ASCEND W1

ISSUE 96,
JUNE 21ST, 2013

"For $230 off contract, that's a pretty damned good price for someone looking to break into a smartphone or upgrade from a much older device."

— OOLZIE

"Ahh, the Huawei 'nipple cam' makes another appearance :)"

— ETHANREDSHIRT

SEVEN LEVELS OF NERD HIERARCHY

ISSUE 96,
JUNE 21ST, 2013

"Where's the basement dweller category?"

— GOLDENRABBIT

NOKIA LUMIA 925

ISSUE 96,
JUNE 21ST, 2013

"Cool phone. WP is pretty slick and all, but I hope the app selection grows. Probably the ONLY con."

— PATELKEDAR

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EYES-ON

TOPO DESIGNS TRIP PACK & TRAVEL BAG

PHOTOGRAPHS BY WILL LIPMAN

MODULAR BACKPACKING DUO

We've seen several modular rucksacks for switching out compartments for cargo- and trip-specific uses. Colorado's Topo Designs has a slightly different take: allowing two of its "made in the USA" bags to function solo or as a pair. The Trip Pack and Travel Bag don't sport removable pouches, but they do have some dapper storage options.

THE DAMAGE: $89 & $229

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EYES-ON

TOPO DESIGNS TRIP PACK & TRAVEL BAG

LARGER CARGO
A sleeve large enough to stow a laptop rests in the Travel Bag alongside a zippered front flap, water bottle spots and its own tablet storage.

PHOTOGRAPHS BY WILL LIPMAN

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EYES-ON

TOPO DESIGNS TRIP PACK & TRAVEL BAG

PHOTOGRAPHS BY WILL LIPMAN

IN TANDEM

While they're both quite capable on their own, straps allow for the two to be used in tandem to wrangle any requisite supplies for that next trek.

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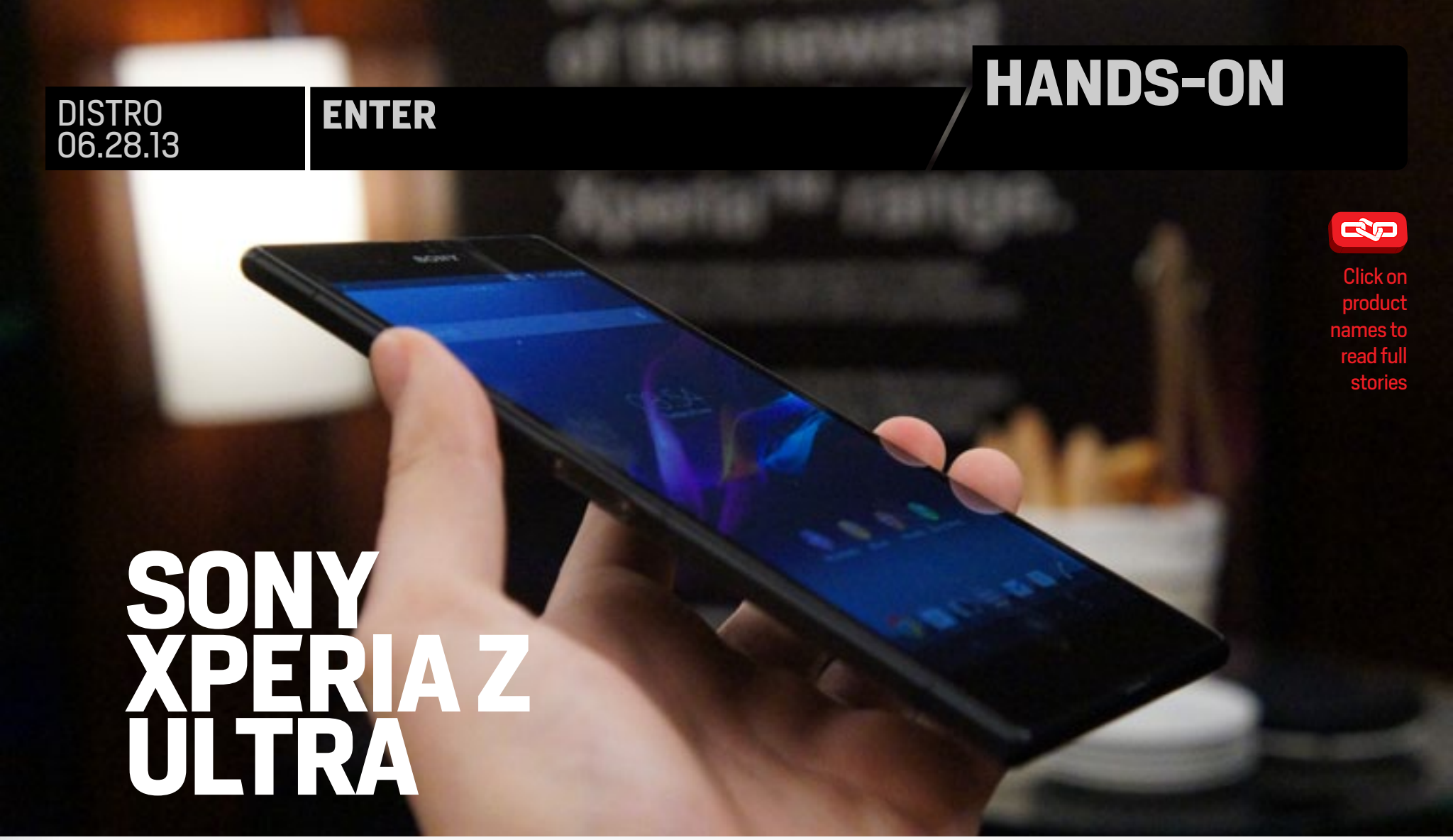
EYES-ON

TOPO DESIGNS TRIP PACK & TRAVEL BAG

LIGHT LOADS
The Trip Pack's internal sleeve secures that slate, and other daytrip necessities can be sorted in zippered pockets or the main compartment.

PHOTOGRAPHS BY WILL LIPMAN



Click on product names to read full stories

SONY XPERIA Z ULTRA

The Xperia Z Ultra follows the lines of the rest of the Z series. It has the same "OmniBalance" plane, uniform screen surface, but this time it measures in at 6.4 inches across, though still running at 1080p resolution. Yep, it does feel substantially bigger than the original Xperia Z as the new Ultra model dwarfs it. That said, we managed to cram it into our trouser pockets without an issue, but it's certainly a bigger device than the likes of LG's Optimus G Pro or Samsung's Galaxy Note II.

The screen has been tweaked to enable input through capacitive styluses and graphite pencils, with a new handwriting-recognition keyboard available for scribbling notes on the go. In practice, it worked well. There's no flash for that rear-facing camera, which drops in resolution to eight megapixels rather than the 13-megapixel sensor of Sony's last flagship. Our early camera tests offered up images that were pretty crisp in well-lit conditions, but the noise started to creep in on shadows.

Unsurprisingly, the Snapdragon 800 was as brutally productive as our early benchmarks hinted at. On this early model, we got a SunSpider score of 835.4ms — and that's before optimization. That 1080p display is sharp and bright, although we're not sure if it stands up against our current favorites: there's still a dull haze at wider viewing angles. We're intrigued as to whether that 3,000mAh battery will go the distance with such a big screen, but we'll have to wait for the full review to test it out.

PRICE: TBD

AVAILABILITY: Q3 2013

THE BREAKDOWN: THE 6.4-INCH XPERIA Z-STYLED HANDSET WIELDS A ROBUST SNAPDRAGON 800 CHIP TO POWER THE LOT.

SAMSUNG GALAXY S4 ZOOM

Click on product names to read full stories

It's easy enough to describe the Galaxy S4 Zoom, since it's essentially a Galaxy S4 Mini with a 10x zoom lens stuck on the back. But that sort of summary doesn't do it justice. When you hold the phone-slash-camera and look at the optically stabilized image captured by its 16-megapixel, point-and-shoot-grade sensor, you begin to realize that — at least for those who do a lot of snapping and sending — this combo of components holds some serious power.

Just like the first Galaxy Camera, it's all about fun and immediacy: the ability to edit, organize and share decent-quality images using Android apps and cellular data connectivity. The key advantages are that the GS4 Zoom can work as a regular phone for voice calls, and that it's *just about* portable enough to be used that way, whereas the Galaxy Camera was a lot bulkier. With these gains, the smaller zoom (10x instead of 21x) and lower-res screen (qHD instead of 720p) don't overly faze us, so long as the final selling price takes it all into account. Ultimately, our only hesitation is the impending arrival of the so-called Nokia EOS, likely due on July 11th, which takes a totally upside-down approach to smartphone photography and is apt to be much more pocketable as a result.

PRICE: TBD

AVAILABILITY: SUMMER 2013 (UK)

THE BREAKDOWN: SAMSUNG WELDS TOGETHER A GS4 MINI AND A GALAXY CAMERA FOR A 16-MEGAPIXEL-SHOOTING HANDSET.

Click on product names to read full stories

SAMSUNG GALAXY S4 ACTIVE

PRICE: $200 (ON-CONTRACT)

AVAILABILITY: NOW AVAILABLE (AT&T)

THE BREAKDOWN: THE GALAXY S 4 GETS ACTIVE WITH A MORE RUGGED SHELL AND BOTH WATER AND DUST PROOFING.

Ah, the Galaxy S4 Active: it's like the regular Galaxy S 4, but, you know, more rugged. It's actually not a truly rugged device, since it hasn't been built to meet military specifications, but it's certainly designed to stand up to slightly more abuse than its non-Active namesake. It is able to survive in up to a meter of water for 30 minutes and rubber flaps protect sensitive areas, like the micro-USB port on the bottom edge. The beefed-up build adds some weight, and we actually find it quite welcome. The S4 Active has a pleasant and natural heft to it. The weight makes the phone feel less fragile than the regular S4 and also delivers a better balance in the hand.

Guess what? It's very, very much like the Galaxy S 4. In many ways, we might be tempted to say we actually prefer the GS4 Active. There are hardware buttons at the base, in place of the mono-button we've come to associate with the GS range. Flip this beast over and instead of unfettered plastic, you'll see rock-solid rivets. Despite being waterproof and dustproof, the GS4 Active doesn't feel notably chunkier, or more cumbersome than the original Galaxy S 4. Much like the OG GS4, we're still impressed with the display, and can't wait to put it through the full review paces. It's not all "the same, but tougher," though. The 8-megapixel camera is a drop down from the 13 megapixels that you may be used to with the original, but we can live with some compromises if it means we get to take those smaller shots underwater!

SAMSUNG GALAXY NX

Click on product names to read full stories

This is the Galaxy NX, an ILC with LTE connectivity that's capable of capturing at 8.6 fps and contains a hybrid autofocus system made by Samsung. In fact, the company says it's behind every part of this new device, from the quad-core 1.6GHz Pega-Q processor, to the 4.8-inch LCD screen, to even the shutter mechanism. Samsung's packed an impressive amount of technology into the Galaxy NX. One feature worth talking about is its hybrid AF system, which combines phase detection (across 105 points) with contrast autofocus (across 247 points on the image). From our first impressions within a pretty hectic meeting room, focus was certainly quick, although a lack of any high-speed (or distant) objects meant it's something we'd certainly like to give more serious testing.

Size-wise, the Galaxy NX actually falls between a DSLR and other ILC cameras we've used. The handgrip is substantial and comfortable, and the only curious thing we noted when first handling it was how big that 4.8-inch touchscreen looked on the back of what otherwise felt like a typical ILC shooter. There's a built-in flash, plus a hot shoe for more potent lighting, while the touchscreen is the same resolution (and tech: HD Super

PRICE: TBD

AVAILABILITY: SUMMER 2013 (UK)

THE BREAKDOWN: SAMSUNG PACKS A QUAD-CORE PROCESSOR, JELLY BEAN AND LTE CONNECTIVITY INTO THIS MIRRORLESS ILC.

Clear TFT LCD) as the Galaxy Camera. This means that while it won't stand up to the color reproduction or clarity of the Super AMOLED on the Galaxy S 4, it's made for outdoor viewing.

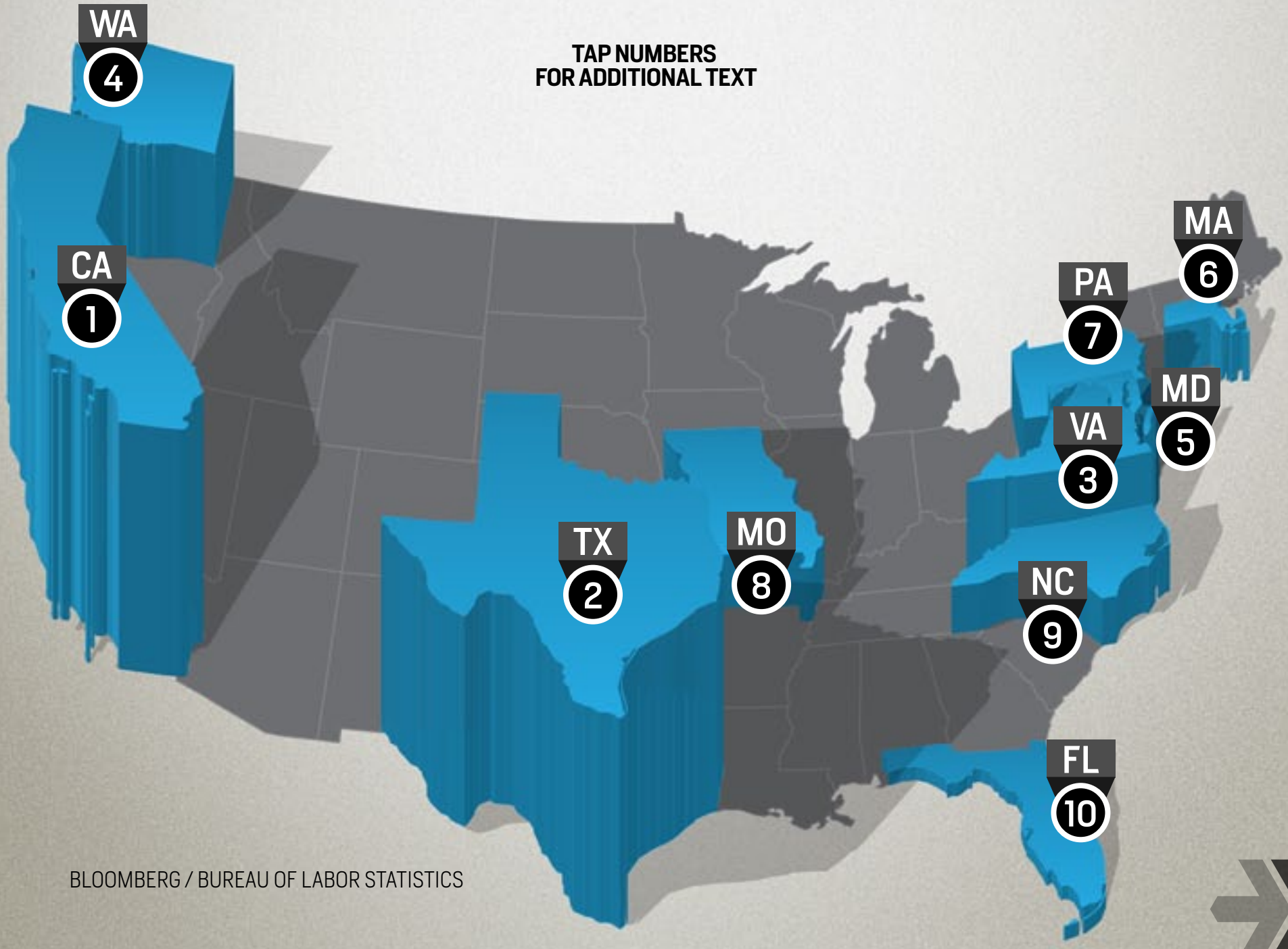
If you thought you'd miss out on Samsung's... flair for extra software, you haven't. The Galaxy NX houses more than 30 new smart modes, offering more casual shooters some automated camera settings to maximize their chances of a good shot. These new automatic profiles tie into a new feature called Smart Mode Suggest, where the Galaxy NX will auto-detect shooting conditions and offer up three possible ways to take the shot. Another pre-installed addition we are happy to see here is Dropbox, and the app arrives with 50GB of cloud storage free for two years. Sharing photos and images beyond the viewing screen is, unsurprisingly, pretty effortless.

When it comes down to tweaking more technical settings, this can be done by combining the physical controls (usually involving the handgrip dial) and the touchscreen. Happily, too, the Galaxy NX displays a row of current settings along the top of the screen, while focus mode and other information reside in the top-left corner. If we have one major concern with the Galaxy NX, it's the start-up time. Sure, you'd typically keep the camera on while you're near something worth shooting, but it's a lengthy wait to start up cold, despite the presence of a quad-core processor as part of the kit. D

Smart Money Jobs in the USA

The United States unemployment rate may still be high at 7.6 percent, but opportunities in Science, Technology, Engineering and Math (STEM) are growing. A recent report published by *Bloomberg* delved into data from the Bureau of Labor Statistics to see which states have been the most fruitful for these jobs. Comparing growth from 2001 to 2012, it found that California was leading the way by adding 105,400 STEM jobs, and while overall job growth in the state fell by 1 percent, the growth for tech occupations was up 12 percent. In the top 10 states, these STEM positions paid $80K on average. That's about 70 percent more than most other positions and it seems petroleum engineers and physicists are among the biggest earners. — *Jon Turi*

TOP 10 STEM JOB-PRODUCING STATES BY NUMBER OF POSITIONS ADDED 2001 - 2012



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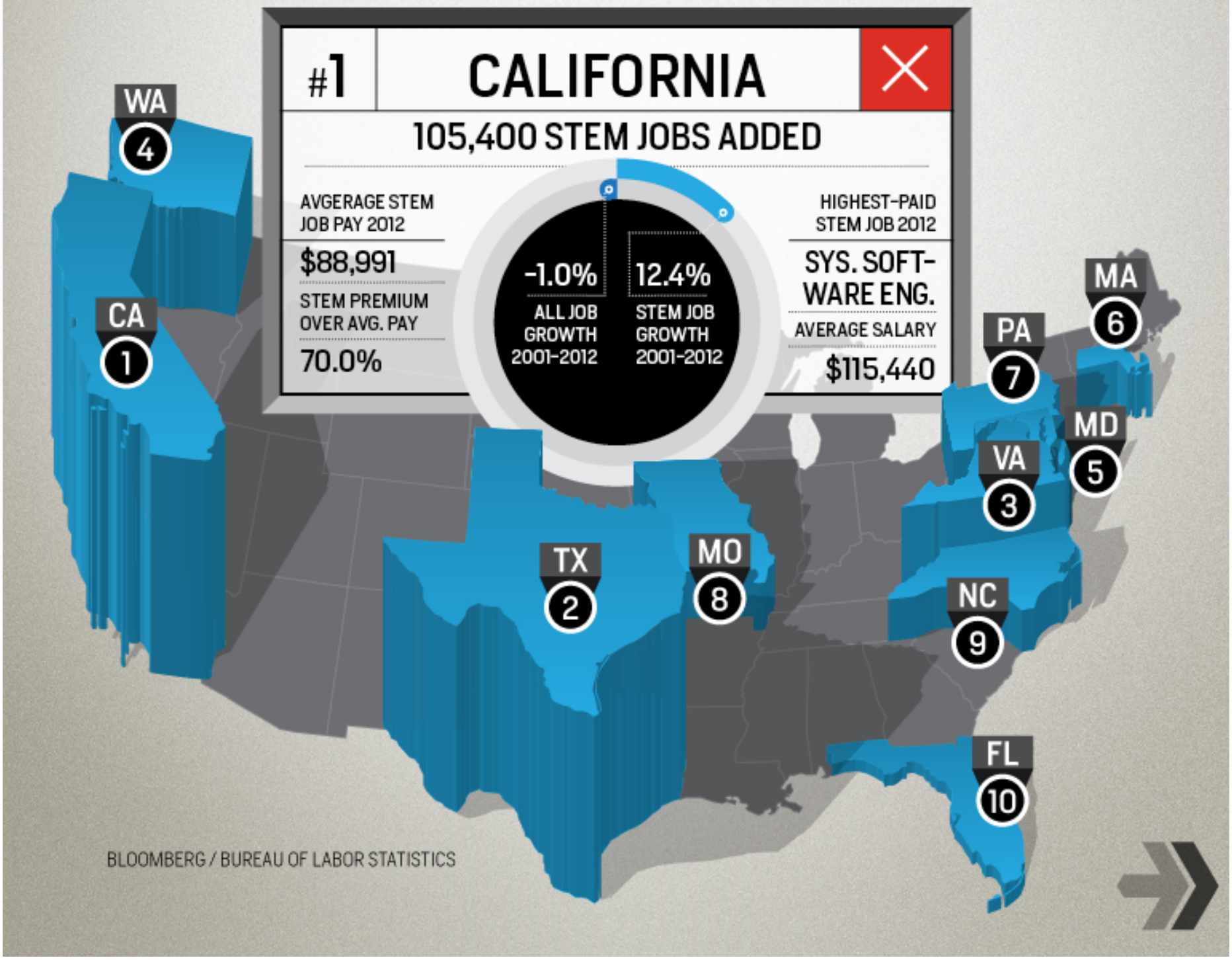

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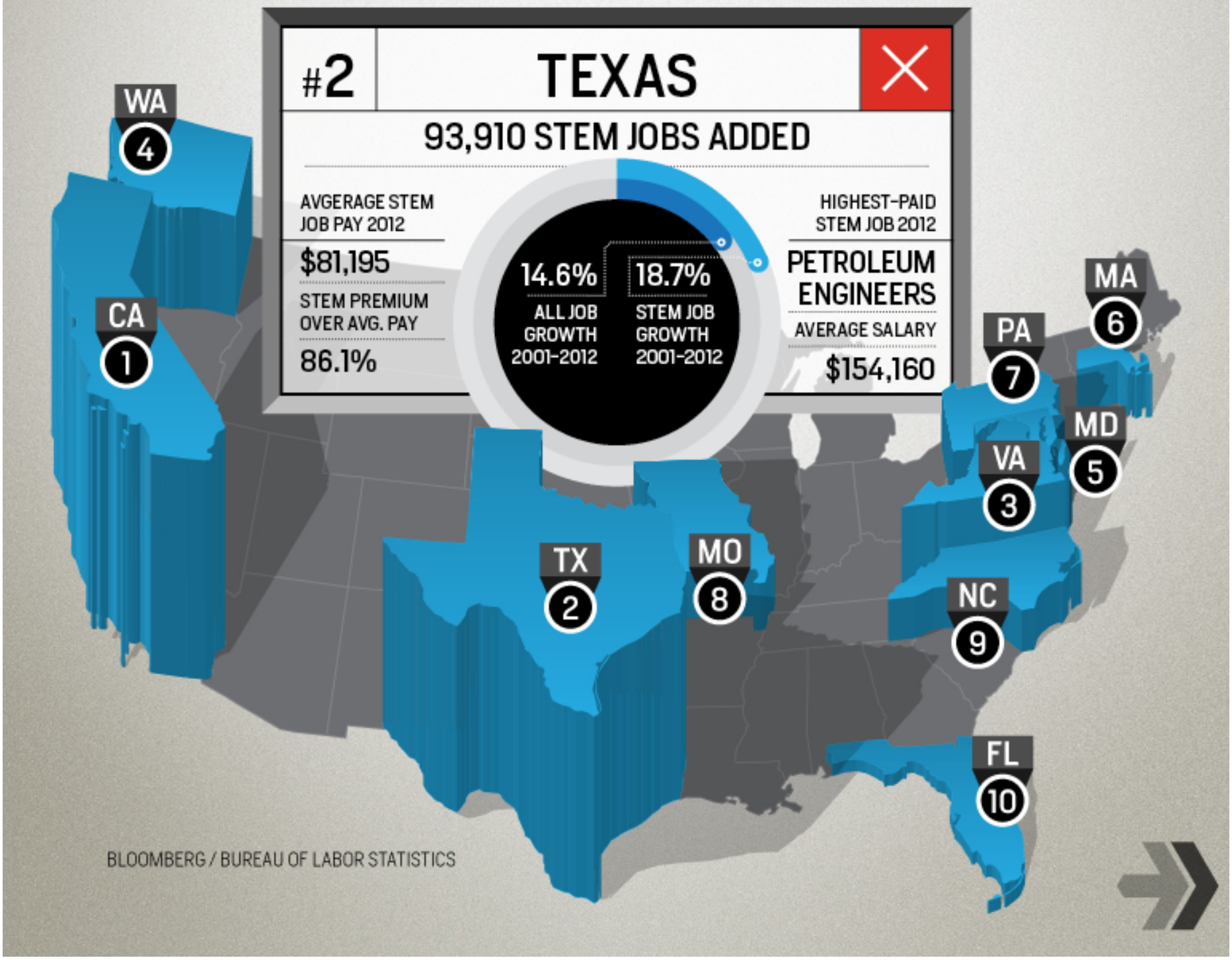

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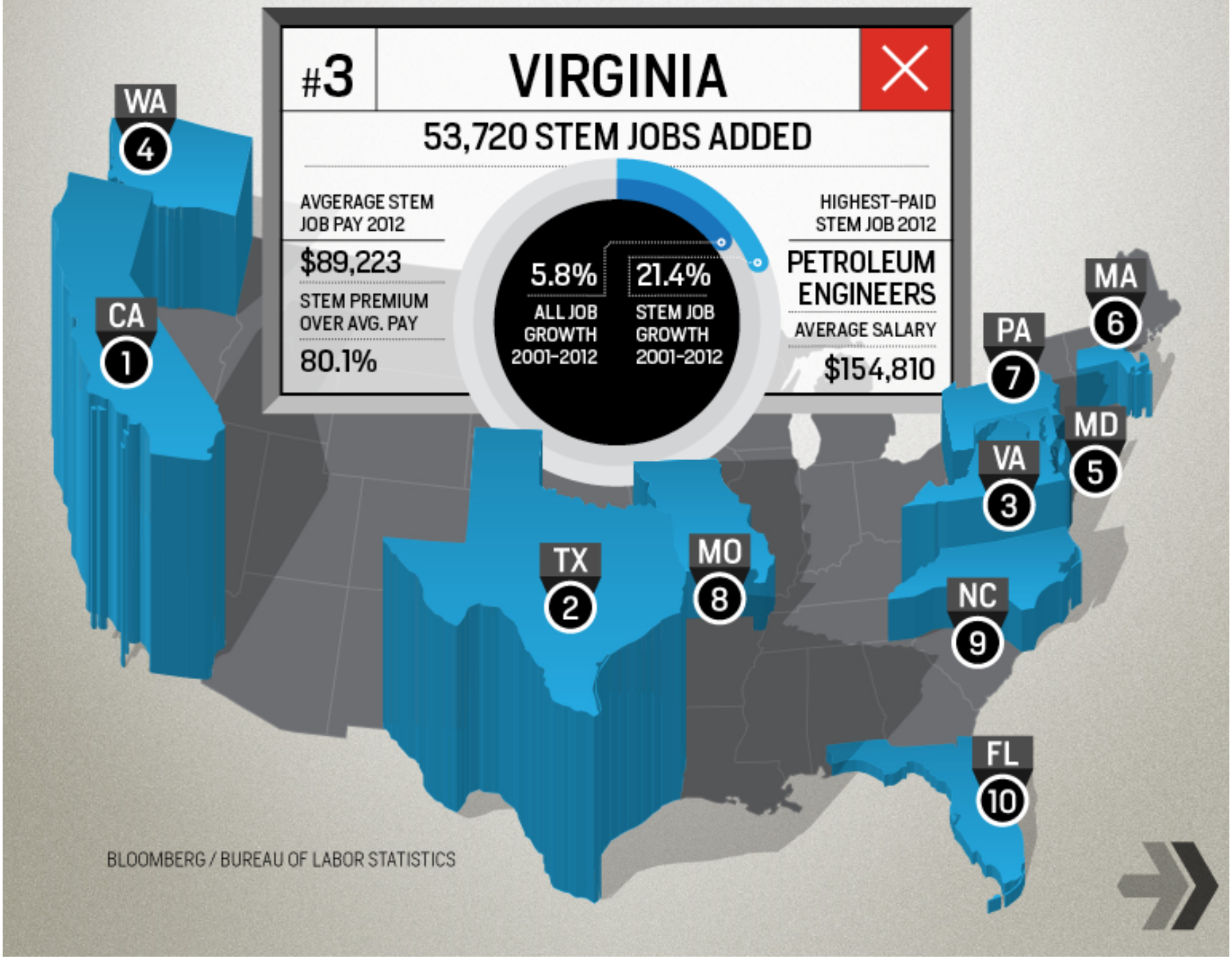

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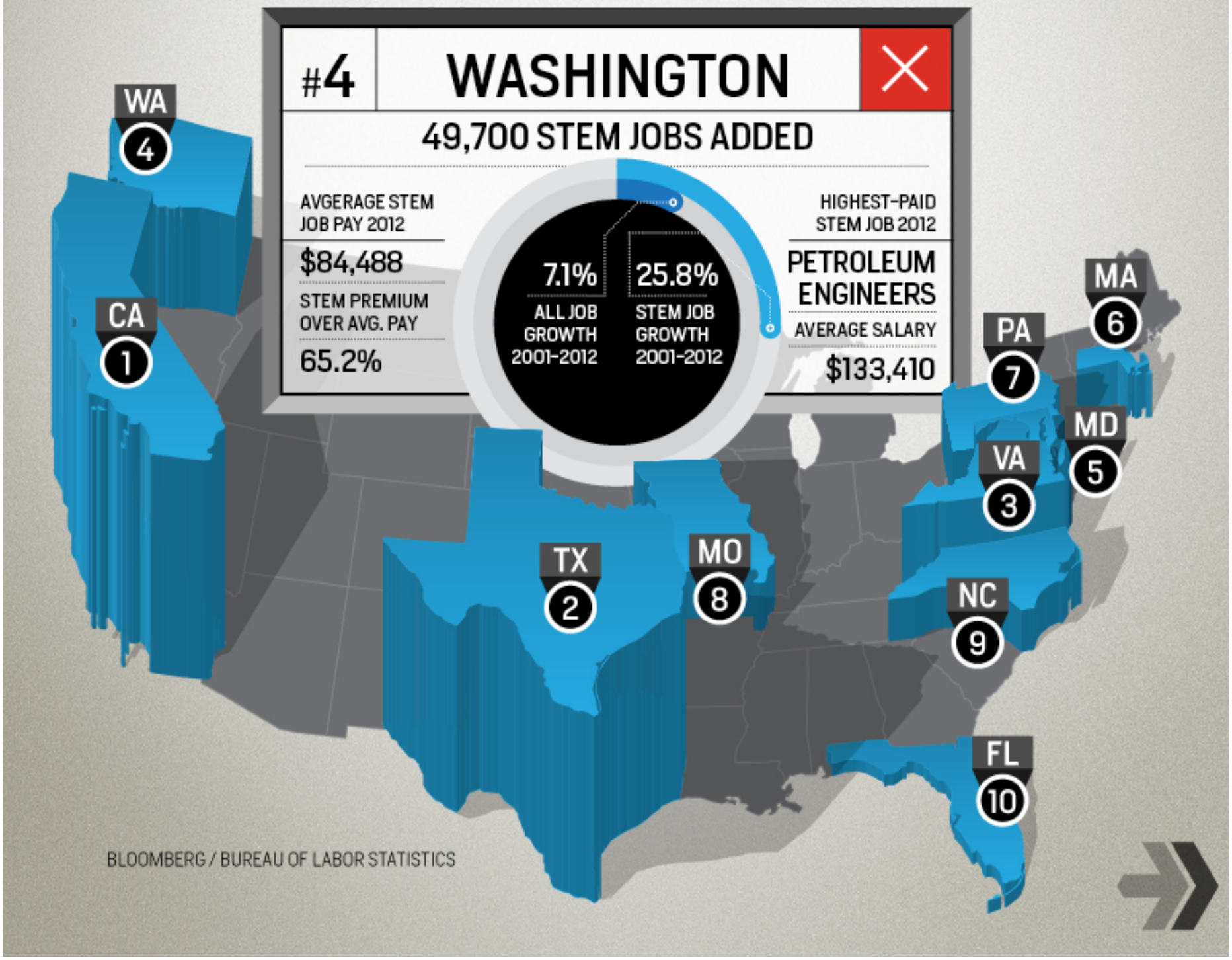

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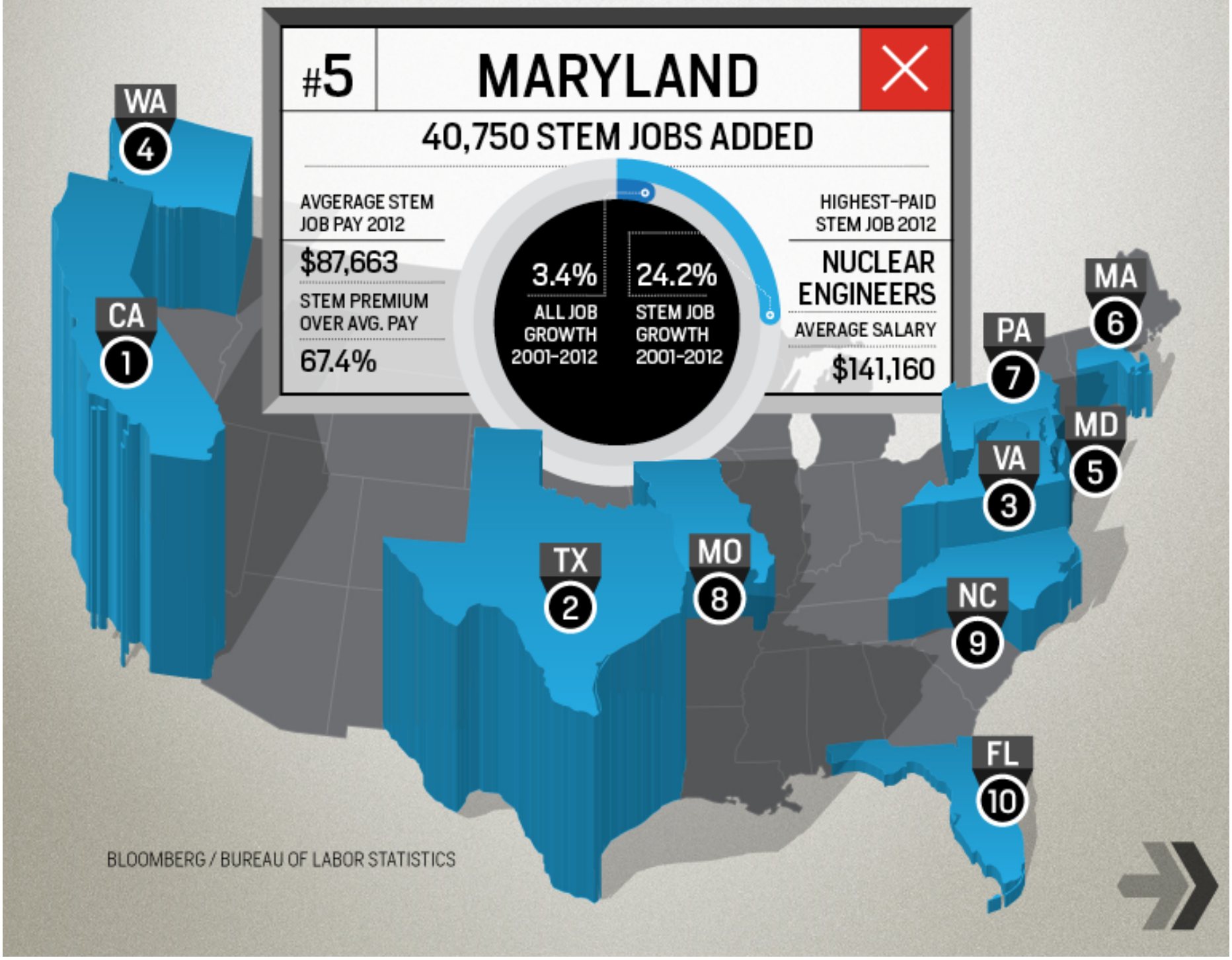

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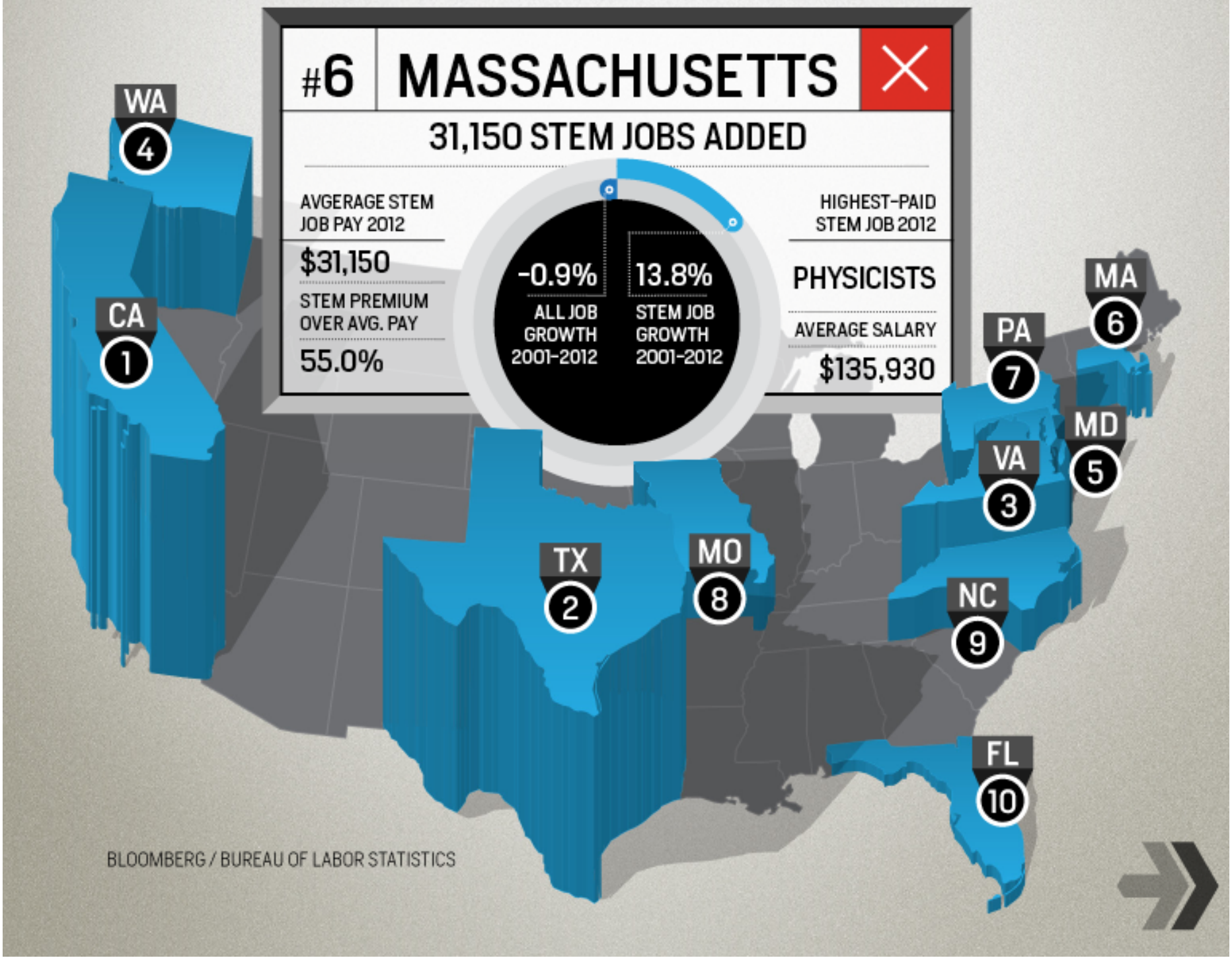

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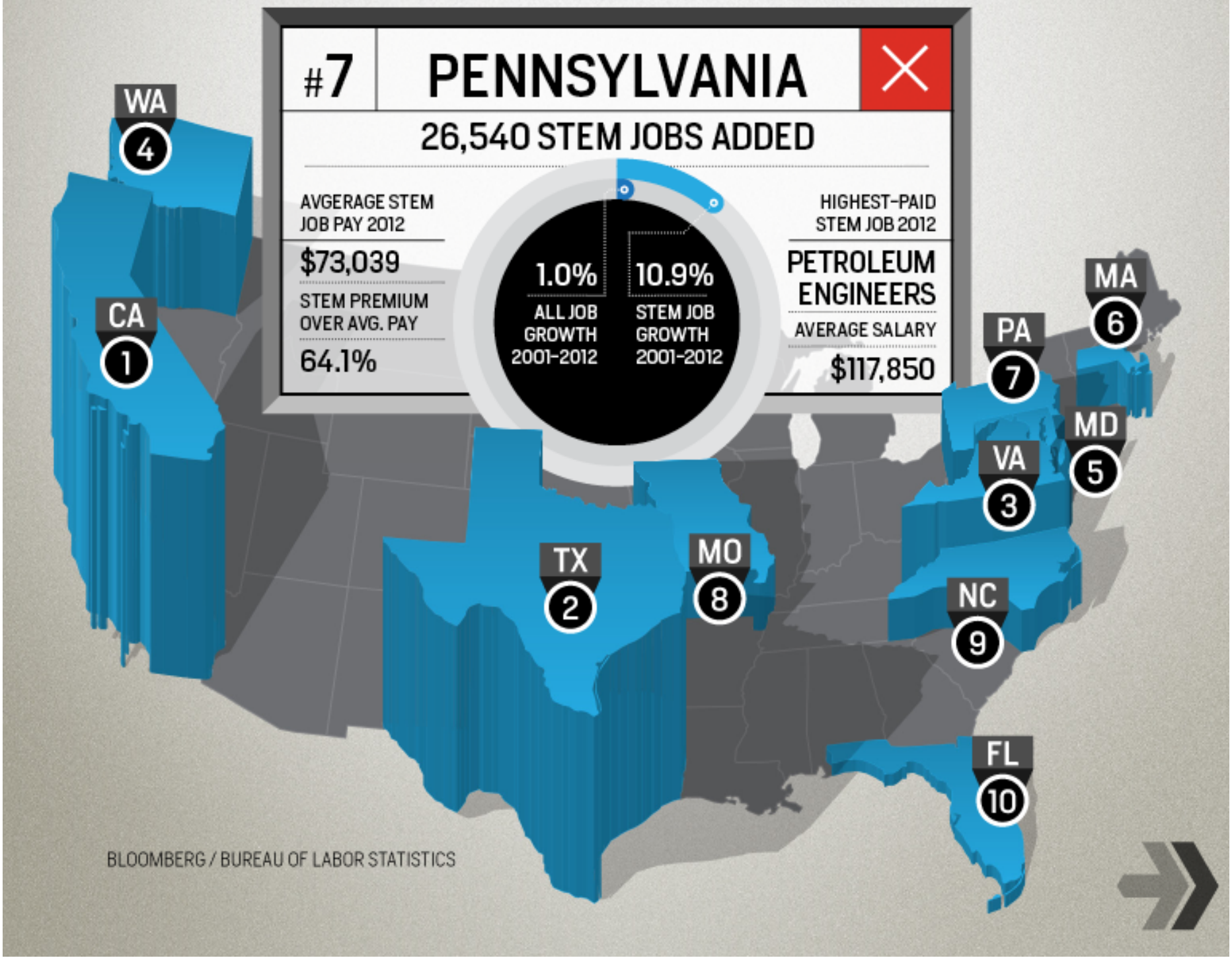

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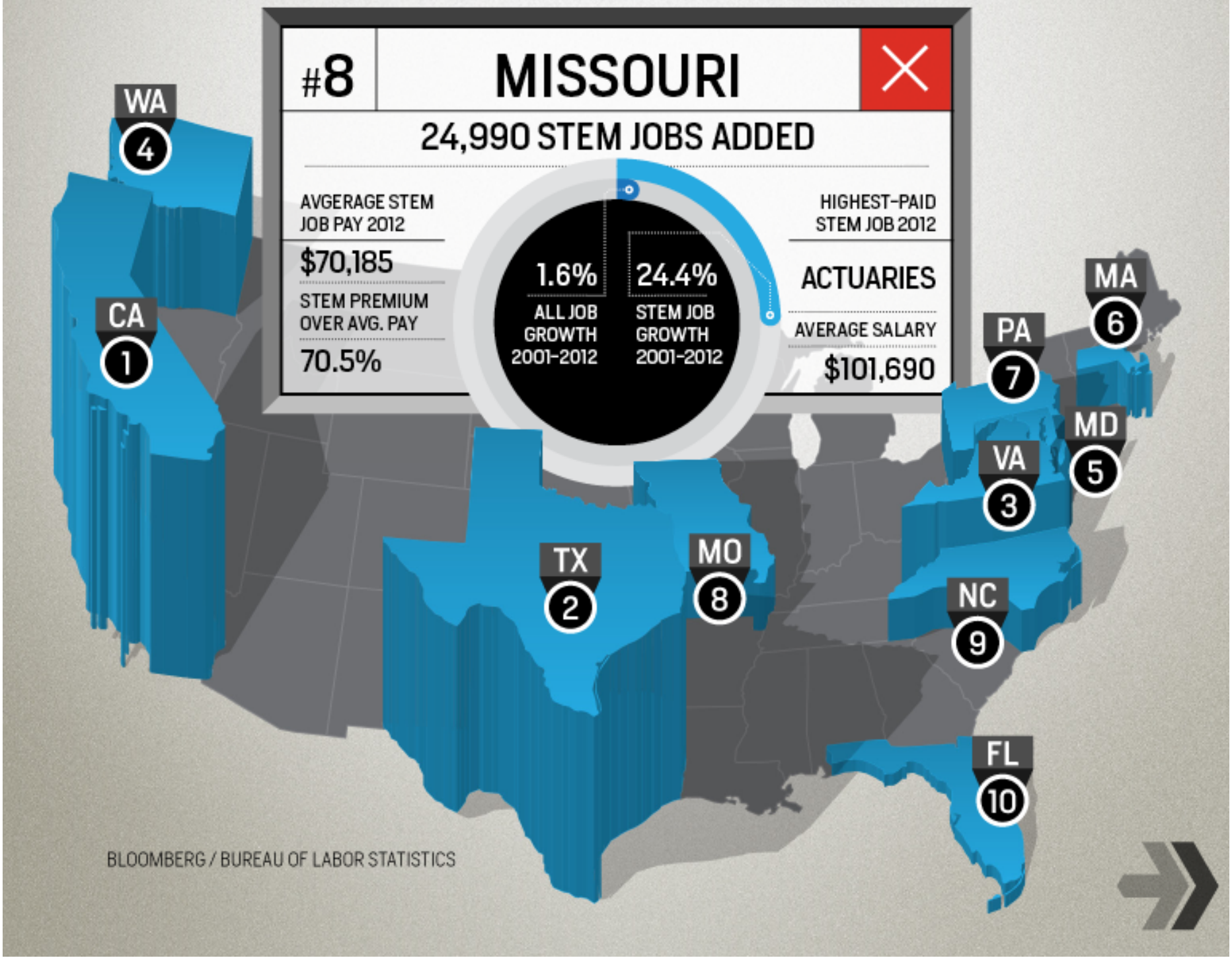
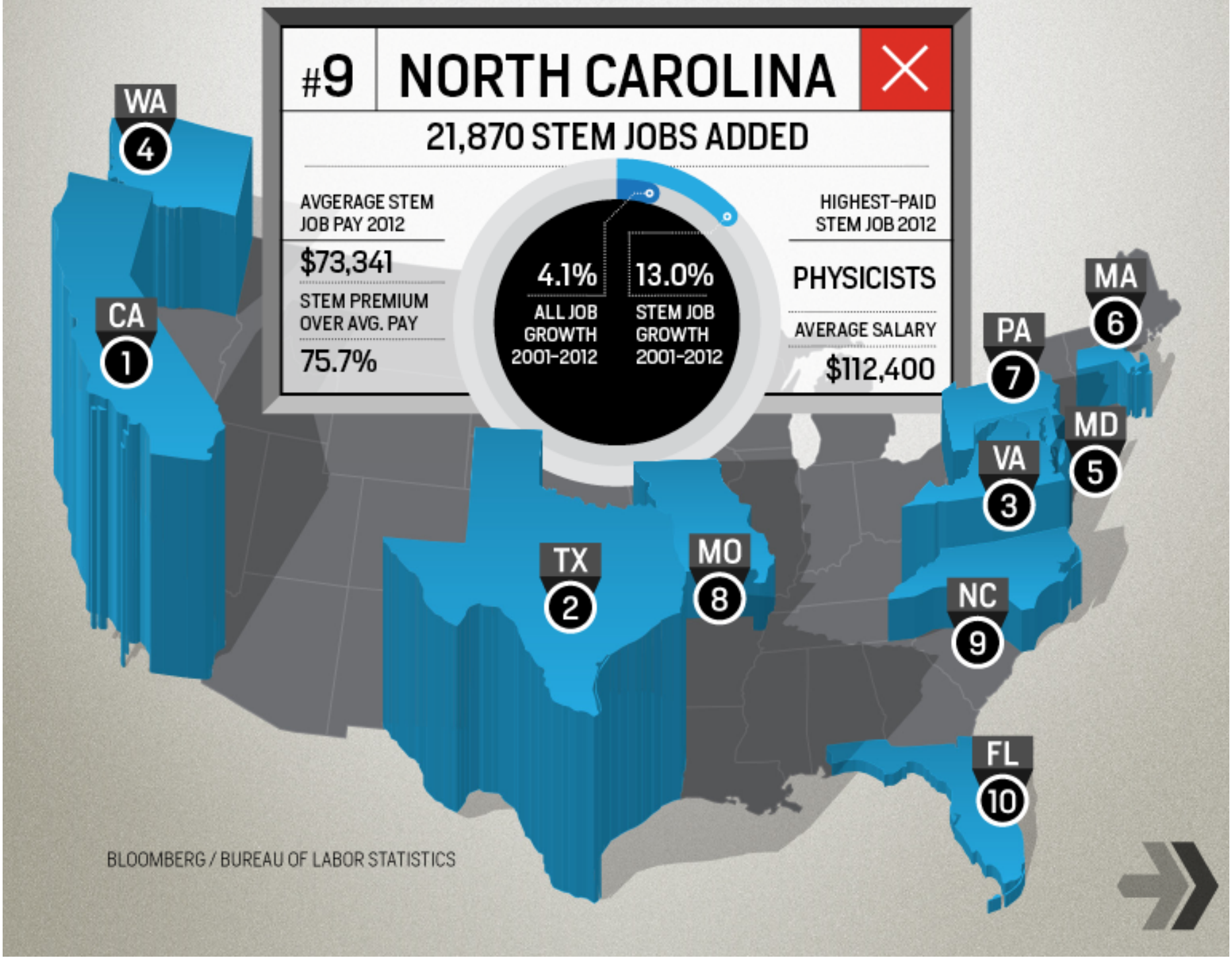


Smart Money Jobs in the USA

The United States unemployment rate may still be high at 7.6 percent, but opportunities in Science, Technology, Engineering and Math (STEM) are growing. A recent report published by *Bloomberg* delved into data from the Bureau of Labor Statistics to see which states have been the most fruitful for these jobs. Comparing growth from 2001 to 2012, it found that California was leading the way by adding 105,400 STEM jobs, and while overall job growth in the state fell by 1 percent, the growth for tech occupations was up 12 percent. In the top 10 states, these STEM positions paid $80K on average. That's about 70 percent more than most other positions and it seems petroleum engineers and physicists are among the biggest earners. — *Jon Turi*

TOP 10 STEM JOB-PRODUCING STATES BY NUMBER OF POSITIONS ADDED 2001 - 2012



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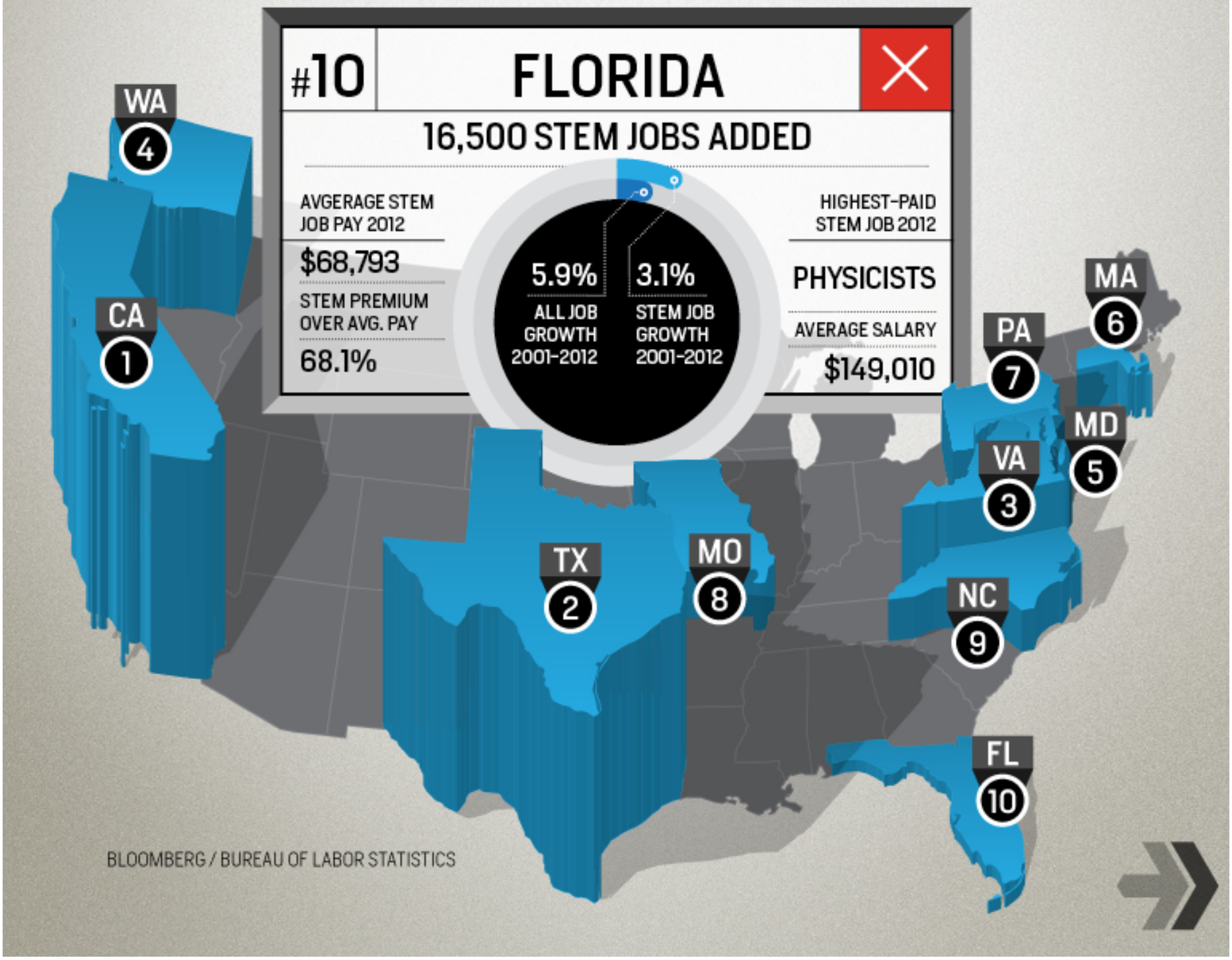
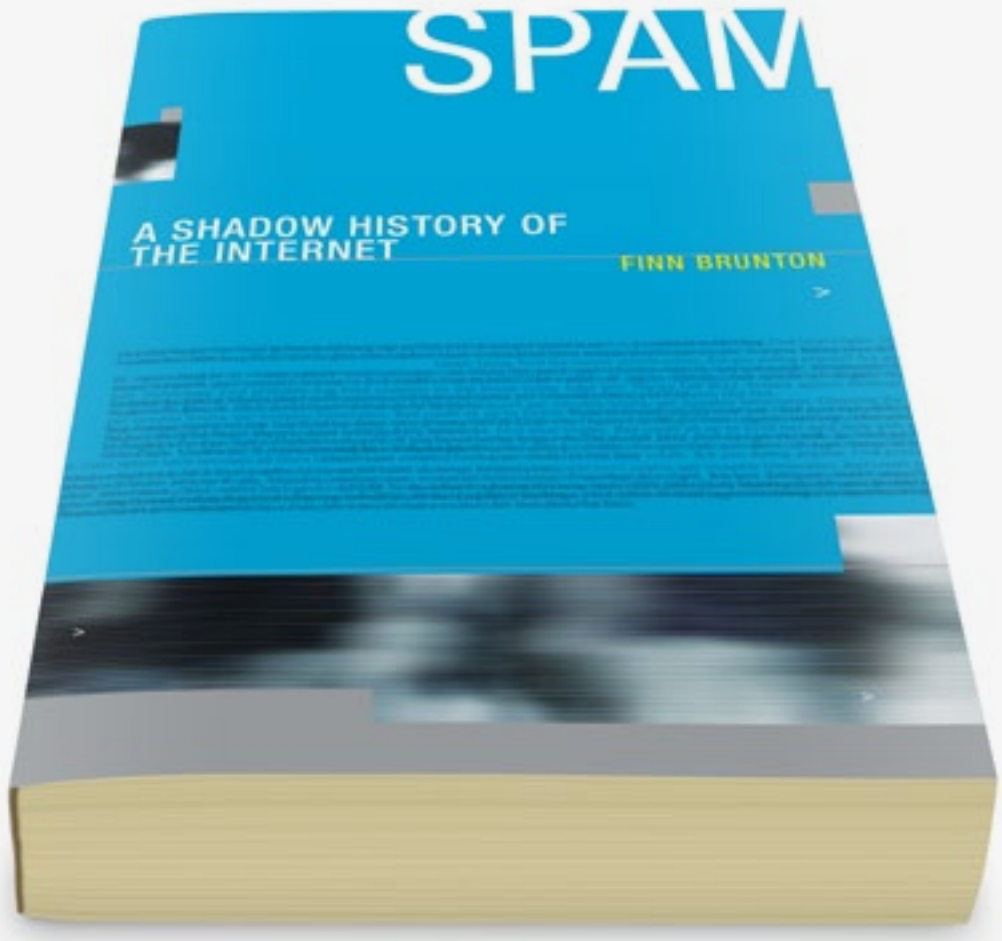


RECOMMENDED READING



COURTESY OF MIT PRESS

Spam: A Shadow History of the Internet [Excerpt]

By Finn Brunton
Scientific American

A lengthy excerpt of Finn Brunton's new book, *Spam: A Shadow History of the Internet*, courtesy of *Scientific American*, takes an exhaustive look at the history of spam and the efforts to combat it. Indeed, the first part of the excerpt details how spam — an "etymologically restless thing," as Brunton describes it — quite literally became a science. From there, Brunton looks at how researchers used the email dumps resulting from the Enron scandal to develop better spam filters, while also placing spam in a broader context, linking the work of Norbert Wiener in the mid-20th century to more recent efforts to study and understand spam. The book itself is available now from the MIT Press.

Click on headlines to read full stories

Robot Wars
By Rick Paulas, *SB Nation*
Subtitled "an oral history of the birth and death of *BattleBots*," this piece from Rick Paulas goes back to the early '90s to offer a firsthand account of the rise of competitive robot fighting, which went from local San Francisco competitions to cable TV before falling somewhat out of favor.

Scrubbed
By Graeme Wood, *New York*
It's generally accepted knowledge that you can't completely delete something from the internet, but that hasn't stopped some from trying. As Graeme Wood explains in this feature story for *New York* magazine, that includes a "world of black-ops reputation management," which specializes not so much in deleting things, but in producing positive search results to cover up the negative ones.

Cities are being redrawn according to Google's world view
By Sam Jacob, *Dezeen*
Some thoughts from writer and architect Sam Jacob on the growing trend in nature-infused campuses for big technology companies — from Apple to Facebook to Amazon — or what Jacob describes as self-contained ecosystems that are reshaping the natural landscape.

Second Life turns 10: what it did wrong, and why it may have its own second life
By Wagner James Au, *GigaOm*
It says quite a bit about its current state that Second Life's 10th anniversary passed without much notice or fanfare, but longtime chronicler of the virtual world Wagner James Au took some time to consider its legacy in this piece for *GigaOm*, suggesting that there's much we can still learn from it — and possibly even some life still left in it.

FORM IN THE USA

DISTRO
06.28.13

FORUM

SWITCHED ON

BY ROSS RUBIN

THE MAC PRO MIGHT have been worthy of the "One More Thing" kinds of reveals that Steve Jobs used to do at Apple events. Despite being foreshadowed by Tim Cook as a product the company was going to make in the US, it was virtually carted in from left field at an event that focused broadly on new operating systems before a crowd of developers that could appreciate its power. That said, it will likely require OS X Mavericks, a thematically fitting release for a product that represents a new wave in Apple's design.

Some have said that iOS 7 may be the company's New Coke. The Mac Pro, though, is the new can. Its cylindrical form represents a new design for Apple, albeit one that jibes with the company's affinity for simple, rounded, iconic shapes. Like the new AirPort Extreme, it has a significant vertical profile, but is a fraction of the size of its predecessor designed to accommodate multiple optical drives and hard drives.

The new internals define a beast of a computer, which includes an Intel Xeon E5 chipset supporting up to 12 cores, a four-channel DDR3 memory controller running at 1866MHz, an AMD FirePro workstation-class GPU with up to 6GB of dedicated VRAM and PCI Express-based flash storage. All of this is cooled by a single, quiet fan that expels air through the top via backward-curved

“The Mac Pro represents a series of revisits for Apple — a return to the high-end market and to US manufacturing.”

impeller blades (like you would be caught dead with forward-curved impeller blades).

The Mac Pro may now be small enough to vie for a place on a desk the way a Mac mini would, but it will be used and priced nothing like Apple’s other diminutive desktop. Apple describes it as the most expandable Mac it has ever made via its ports, which include a complement of Thunderbolt 2 and USB 3.0 connectors. In fact, its lighting-identified connectors accommodate up to 36 daisy-chained devices. You can bet that its externally simple design will need to be augmented by at least some external storage for many of its pro users.

Even after dismissing an Apple price premium, those are the kinds of leading-edge components that will allow the type of margin that accommodates American manufacturing; this should have appeal beyond simple patriotism for Apple, a company that maintains meticulous control over each detail of its products. As the East Coast developer of a crowdfunded smartwatch recently explained, having your suppliers nearby makes it easier to react when there are problems; he keeps his no more than a six-hour drive away and praises their quality. The production of the Mac Pro, on the other hand, will cast a wider net, with elements of it occurring in Texas, Kentucky and elsewhere.

The Mac Pro represents a series of revisits for Apple — a return to the high-end market and to US manufacturing. But its unique place in Apple’s lineup may make it the exception in Apple’s strongly consumer-leaning product line, where competitive pressure for iOS-based products require higher prioritization of cost as well as other factors. When details about the Mac Pro are finalized, we will see if the symbolic “Made in the USA” sticker can avoid coming with sticker shock. D

INTERNET RADIO IS INHUMAN

THIS IS THE MODEM WORLD

DISTRO
06.28.13

FORUM

BY JOSHUA FRUHLINGER

I gripped the handset, twirling the coiled wire around my wrist, listening for a ring tone. Instead, a busy signal triggered an autonomous twitch reaction in my teenage hand: hang up, wait for dial tone, hit redial, listen for ring tone. Again. Again.

Finally.

"KROQ, you're caller number 23, what's your request?"

"'Party at Ground Zero,' Fishbone!" I half shouted.

"You got it," and she hung up.

I got my request in!

I was part of the musical hive mind!

I hung up and redialed. Busy tone. Again. Again.

Such was the life of my teenage self, growing up in Southern California. Sunday nights were dominated by homework and KROQ's Rock Block Weekends, in which we heard our most-requested alternative hits followed by Rodney on the Roq, the sensei of music discovery. Rodney was our leader, our prophet; he who went forth into the faraway lands of England and New York and Japan and returned to us with Blondie, The Ramones, The Sex Pistols and The Smiths.

We were lucky to have grown up with KROQ and a DJ like Rodney Bingenheimer. These days, radio is a bit of a mess. Terrestrial radio, in order to pay the bills, generally plays low-risk pop and hits that keep the less adventurous and older listeners listening. It's not the best place to discover new music.

Meanwhile, internet radio, while often wide open and free, is a crapshoot of great stuff interspersed with a lot of derivative dribble. Rhapsody and Pandora, at the top of the heap, are for the most part machines, not people. And while there are some wonderful playlist creators — my favorite being Blalock — radio DJ personalities like Bingenheimer are rare. Gone are the trustworthy DJs that we came to know on weekend evenings, as quirky as they were. They were comforting, they took risks and they were human.

Some may argue that we're better off: We don't need no stinkin' DJ to tell us what to listen to. Nay, we'll find our own up-and-coming bands, thank you very much. In some cases, this works. Acts like Skrillex and Tame Impala owe a lot of their recent success to internet fans. Let

> “It seems pretty clear that the big radio stage is a thing of the past.”

the people speak, we say now. The number of listens and song downloads will determine who is good, not what the DJ spins.

But for every Skrillex there are thousands of talented bands that would love to have someone like Rodney on the Roq give them a chance on the big stage. Maybe no one would ever request it again. Maybe it would be a huge hit. But we’ll never know. It seems pretty clear that the big radio stage is a thing of the past.

Just the other day, my good friend and Editor-in-chief of TUAW, Victor Agreda, asked me if I’d ever bought music that I first heard on a streaming service. Without hesitation I answered “no.” I then tried to figure out why this was. I told him that I preferred to discover music differently, either by reading interviews with bands I liked (to see who influenced them) or by downloading playlists like Blalock’s Indie Rock Playlist, which, for all intents and purposes, is really just a guy I trust creating a playlist of new music much like Rodney did in the ‘80s.

Maybe Apple’s upcoming iTunes Radio will get me to take the plunge into internet radio. After all, it promises “Featured Stations [not sure why that’s capitalized], stations inspired by the music [I] already listen to and more than 200 genre-focused stations.” So, in short, more of the same, right?

I suppose I’m not thrilled with the fact that we’re OK replacing the DJ with code. Sure, it works sometimes. Type in a band you like and Pandora will create a station that will probably introduce you to new music just like it. Sounds great.

But imagine if we replaced, say, chefs with machines. “We noticed you like cheeseburgers. Here, have a bacon cheeseburger.” That’s a fair assumption, but when I eat a cheeseburger, I want fries. Sometimes I want a salad instead. People are weird like that, and no machine can take me from The Vaccines to Neil Diamond.

Likewise, Rodney on the Roq used to go from The Smiths to Van Halen to The Germs. Unless the code has a lot of personality injected into it, I can’t imagine a recommendation system doing the same. And even if it did, gone would still be Rodney’s fun stories about how he got David Bowie a record deal.

Don’t get me wrong: having vast collections of music available to listen to at any moment at my command is a good thing, and recommendations based on my — and my friends’ — listening habits are even better. But I see the writing on the wall: we’ve lost the genius of the great DJ, the human who exposes us to new music, who takes us on a trip every Sunday night.

Would Pandora have introduced us to The Sex Pistols? I’m not so sure. D

PROGRAMMING IS FUNDAMENTAL
Code.org's Computer Science Campaign

AMERICA'S MOST SUSTAINABLE CITY
A Green Dream Deferred

MADE IN THE USA

AMERICAN REDUX
Apple, Motorola, Lenovo and the Pulse of Stateside Manufacturing

THE ENGADGET INTERVIEW
Theoretical Physicist Michio Kaku

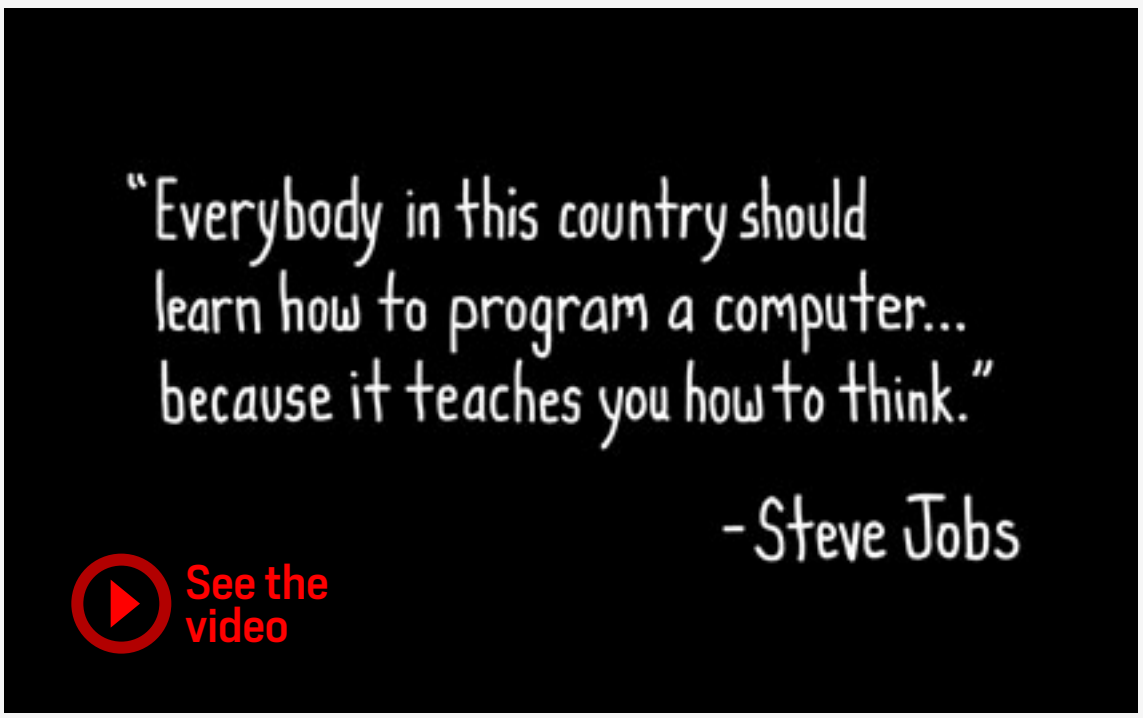
PROGRAMMING IS FUNDAMENTAL: A CLOSER LOOK AT CODE.ORG'S STAR-STUDDED COMPUTER SCIENCE CAMPAIGN

The non-profit started with a short video and a simple idea: Every student in every school should have the opportunity to learn to code. All it has to do now is figure out how to make that happen

By Brian Heater

"I**WAS 13,"** begins the bespectacled man in the button-down shirt, "when I first got access to a computer." He's credited only as "Bill," last name withheld. Beneath his name, helpfully, are the words "Created Microsoft." Then there's Jack, who created Twitter, and Mark, who created Facebook. Last names are superfluous, really. In their world, these are the rock stars (some more literally than others, in the case of will.i.am). It's not just any cause that would have them lining up to say their piece in a five-minute YouTube video. Code.org is their "We Are The World."

Still in its infancy, the organization knows its way around statistics — not surprising, really, for the brainchild of a bunch of computer scientists. And for all the brightly colored graphs and pie charts, it's a fairly abysmal picture. "Less than 2.4 percent of college students graduate with a degree in computer sciences," according to one stat. The figures are equally troubling for earlier grades. "In 39 of 50 states, coding classes don't count towards high school graduation math or science requirements," and "nine out of 10 schools don't even offer computer programming classes." So Code.org did



what any nascent organization would do in the face of such troubling numbers: it brought together a dozen or so of its most famous friends for a web video to announce its presence.

"All these people who've made it big have their own variation of the same story, where they felt lucky to be exposed to computer programming at the right age, and it bloomed into something that changed their life," explains the organization's co-founder, Ali Partovi, seated in the conference room of one of the many successful startups he's helped along the way. The Iranian-born serial entrepreneur has played a role in an impressive list of companies, including the likes of Indiegogo, Zappos and Dropbox. Along with his twin brother, Hadi, he also co-founded music-sharing service iLike.

Unlike past offerings from the brothers, Code.org is a decidedly non-commercial entity, one aimed at making computer science and programming every bit as essential to early education as science or math. For the moment, the organization is assessing just how to go about changing the world. The site currently offers a number of resources for bootstrappers looking to get started in the world of coding. There are simple modules from Scratch, Codecademy, Khan Academy and others, which can help users tap into the buzz of coding their first rectangle, along with links to apps and online tutorials. The organization is also working to build a comprehensive database of schools offering computer science courses and soliciting coders interested in teaching.

But the larger vision is still a very malleable thing, according to Partovi. "We're now in the process of developing a long-term plan including a fund-raising plan, and frankly, we hope to ask people from Bill Gates and Mark Zuck-

FOR THE MOMENT, THE ORGANIZATION IS ASSESSING JUST HOW TO GO ABOUT CHANGING THE WORLD.

Coding can be fun. One of Bill's earliest programs was written to play Tic Tac Toe.

erberg to some of the other big founders to contribute money to it. We don't want them to do that until we really have a big enough plan and a good sense of how much money we'll need and what we'll do with it. Basically we're taking a step back and thinking bigger because of how much success that video had."

The brothers founded Code.org as way of paying homage to their own humble beginnings, which, while half a world away, share a number of common threads with many of those featured in the organization's coming-out video. "We grew up in Iran and started programming when we were 9 years old or so," Partovi explains, launching into a story he's clearly told more times than he cares to remember. "For us, the fact that we were good programmers changed our lives. We were lucky that we were exposed to a computer when we were 9 years old in a country where, frankly, probably no one else knew what a computer was at the time. Because of that fortune, we were able to pay our way through college, and come to Silicon Valley and both independently become successful as entrepreneurs. And our feeling is that kind of opportunity should not just be for the lucky few."

The organization's video certainly left its mark, hitting 20 million views in a month, thanks to its all-star coding team and a simple message: in 2013, computer science should be considered a mandatory skill set for graduates. As with so many other educational initiatives, it's likely to be a bigger success the sooner schools start, and Code.org's massive board is pushing to make coding an essential part of the STEM (Science, Technology, Engineering and Math) curriculum. It seems a big ask in a system where the bureaucracies governing schools move at such a glacial pace, but Partovi argues that it's a necessary one in a time when the US is, rightly, con-

IN APRIL, THE OBAMA ADMINISTRATION UNVEILED A 2014 BUDGET THAT INCLUDED $3.1 BILLION FOR STEM FUNDING — AN INCREASE OF 6.7 PERCENT OVER THE YEAR BEFORE.

cerned about losing its innovative and economic footing.

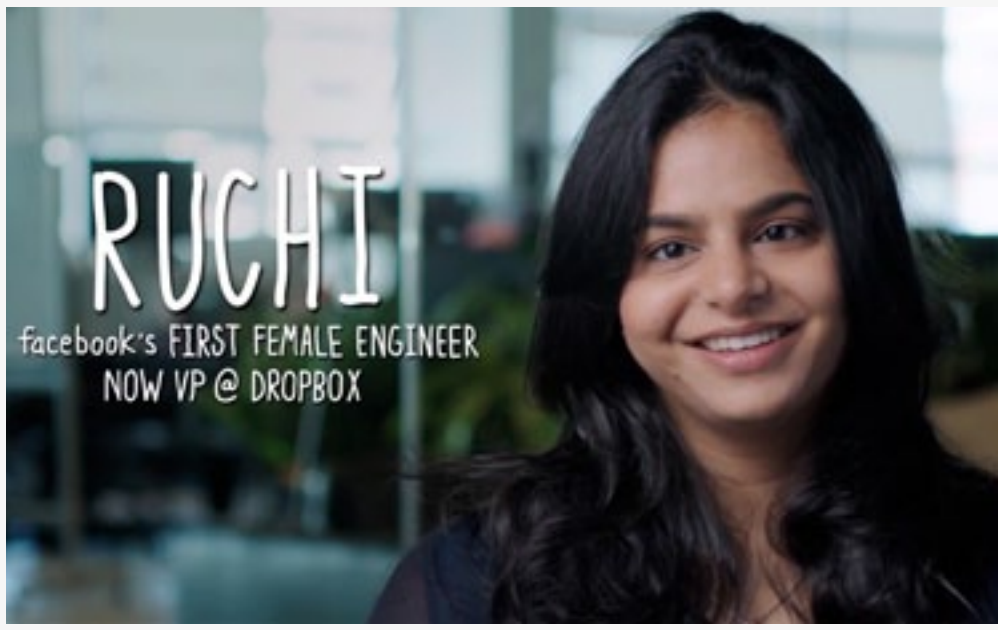
"There's been this myth around outsourcing," Partovi explains. "'Oh, they're shipping the jobs offshore, and they're hiring Chinese and Indian computer programmers.' That is true, but it's only because there simply aren't enough to hire in America. It's not because they're laying off American computer programmers because they're too expensive so they can buy the cheaper Chinese labor. Outsourcing of manufacturing jobs is to save cost. Outsourcing of computer jobs is because the software industry has hired every single computer programmer they possibly can, paid them the most they can and there are still not enough to hire."

But while the inclusion of coding in a standard elementary curriculum may seem a long ways off, the concept has won supporters all over — including President Barack Obama.

In April, the Obama administration unveiled a 2014 budget that included $3.1

PROGRAMMING IS FUNDAMENTAL:

A CLOSER LOOK AT CODE.ORG'S STAR-STUDDED COMPUTER SCIENCE CAMPAIGN



Coding is a common factor in many success stories today, and this central skill should be made available to everyone.

billion for STEM funding — an increase of 6.7 percent over the year before. The proposal echoed comments made in the president's State of the Union address a few months prior.

"Right now, countries like Germany focus on graduating their high school students with the equivalent of a technical degree from one of our community colleges," Obama said. "So those German kids, they're ready for a job when they graduate high school. They've been trained for the jobs that are there. Now at schools like P-TECH in Brooklyn, a collaboration between New York Public Schools and City University of New York and IBM, students will graduate with a high school diploma and an associate's degree in computers or engineering. We need to give every American student opportunities like this." The president echoed the statement later that week, telling the viewers of (appropriately enough) a Google Hangout, "I want to make sure that [young people] know how to produce stuff using computers and not just consume stuff."

It's an encouraging sentiment, to be sure, but ultimately, school curriculums are the domain of local, not federal govern-

"Great coders *are* today's rock stars."
— will.i.am.

ments, meaning that individual schools and school districts have a much more direct say in the subjects they teach — and many, no doubt, would bristle at the suggestion of such missives being imposed from the top down. Code.org's video outreach, however, has highlighted the growing interest in such initiatives.

"There [are] only 4,000 schools in the United States that teach computer programming," Partovi says. "Our website has had 10,000 schools sign up asking us for help to bring computer programming to their school. So if we're able to figure out some way to help them with things they need, we could triple or more the amount of computer science education in America." For now, that means starting small, with instructional videos and teacher training — stopgap solutions until schools get more serious about offering up coding as part of the standard curriculum.

Educational organizations have also voiced support for the movement. "The teachers' unions have all supported Code.org," Partovi explains. "The heads of the two largest national teachers' unions gave us, you know, strong quotes of support. In fact, Randi Weingarten [president of the American Federation of Teachers] — who studied computer science herself — was completely onboard and agreed that learning to code is an incredibly valuable developmental skill regardless if the kid goes on to become a computer programmer as their job." Weingarten's comments reflect a key principal that underlies everything Code.org stands for. "Everybody in this country should learn how to program a computer," begins a Steve Jobs quote that opens the company's promotional video. "Because it teaches you how to think."

"[Coding] taught me how to think and use my brain in ways that I previously hadn't," says Partovi. "Every kid, whether they intend to become an accountant or a doctor or whatever you want to do in life, studying computer science early on really helps your brain develop. For girls in particular, it helps them feel empowered. It helps you feel confident that you can solve problems, or, if there is something that you don't like, you can fix it or change it. If there's something you wish you had, you can create it." D

Brian's work has appeared in Spin, The Onion, Entertainment Weekly, The New York Press, PCMag, Laptop, and various other publications.

The entry to Babcock Ranch. Plenty of room for homes, but plenty of hurdles to overcome.

AMERICA'S MOST SUSTAINABLE CITY: A GREEN DREAM DEFERRED

By Darren Murph

IT SOUNDS LIKE the future. Whirring electric skateboards, the joyous chatter of children in a distant playground and an unusual absence of petrol-powered machinery. It looks like the future, too. Glistening lakes dotting the background, lawns so lush they're mistaken for artwork and an unmistakable reflection from a vast solar farm that doubles as a beacon of unending hope.

The reality, however, is starkly different. The depictions here are mere conceptualizations, and the chore of concocting the most Jetsonized habitat this side of Orbit City is daunting in every sense of the word.

In 2006, one of the most ambitious community plans in all of Florida rolled into action, with owner Syd Kitson hoping to nearly triple the population of Babcock Ranch by providing some 19,000 homes, a smattering of schools and plenty of retail job opportunities. In essence, he was looking to manufacture an entire city. Three years later, Kitson & Partners announced plans in cooperation with Florida Power & Light to construct the world's largest photovoltaic power station. It would be a facility so enormous it could power homes, schools and scores of businesses across some 17,000 acres of abutting land. The goal was brazenly simple: to not only create "the smartest city," but also the "world's most sustainable city."

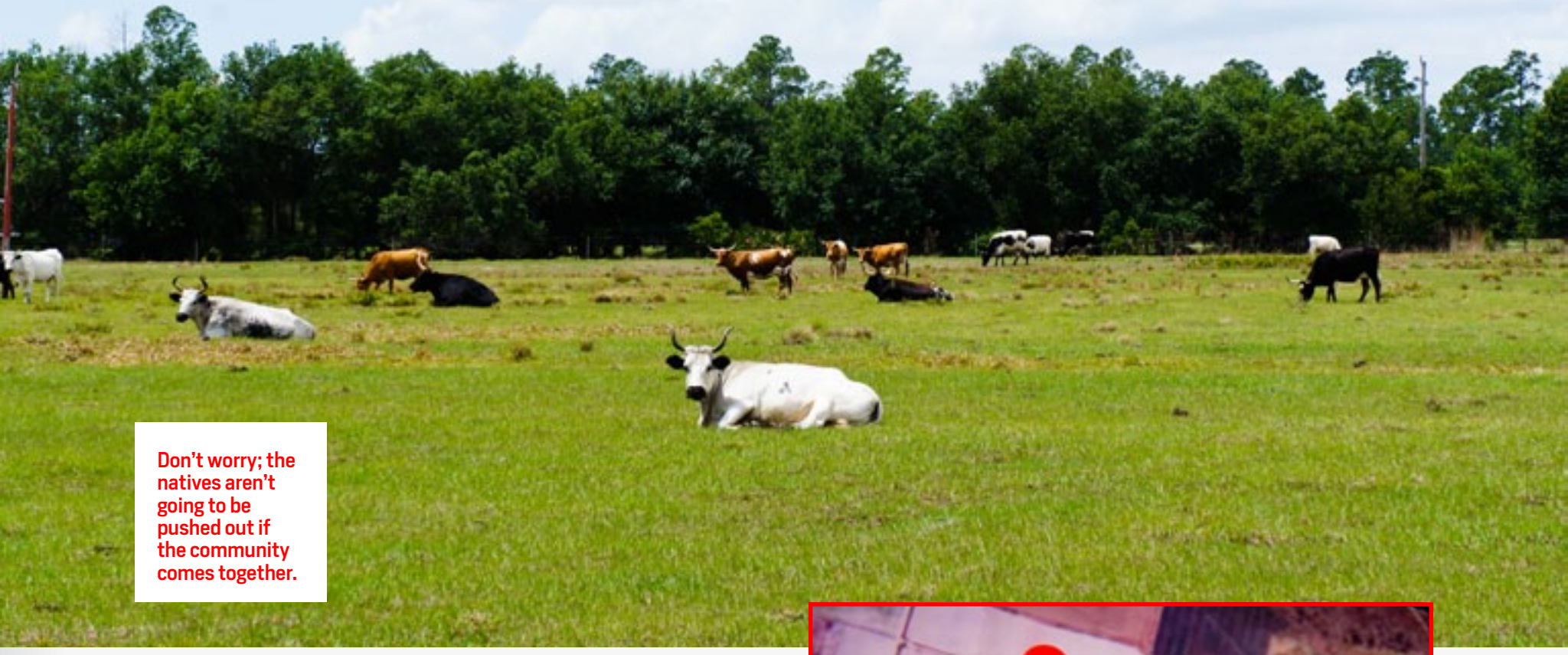
Kitson, chairman and CEO of Kitson & Partners, publicly dubbed Babcock Ranch "Southwest Florida's City of Tomorrow." But after watching Florida's real estate market collapse and our nation's infatuation with sustainability take a backseat to just getting out of debt, these grand plans have been indefinitely postponed.

A SUNNY START

Nearly three years to the day after the aforesaid trumpet was blown — and some eight years after Kitson & Partners initially drafted plans for the community — I blazed a trail to Babcock Ranch's headquarters. It's situated in a quiet region of Punta Gorda that few outside of the Southeast would even associate with a state that markets little other than its powdery white edges.

As the name implies, the destination is actually a working ranch. While

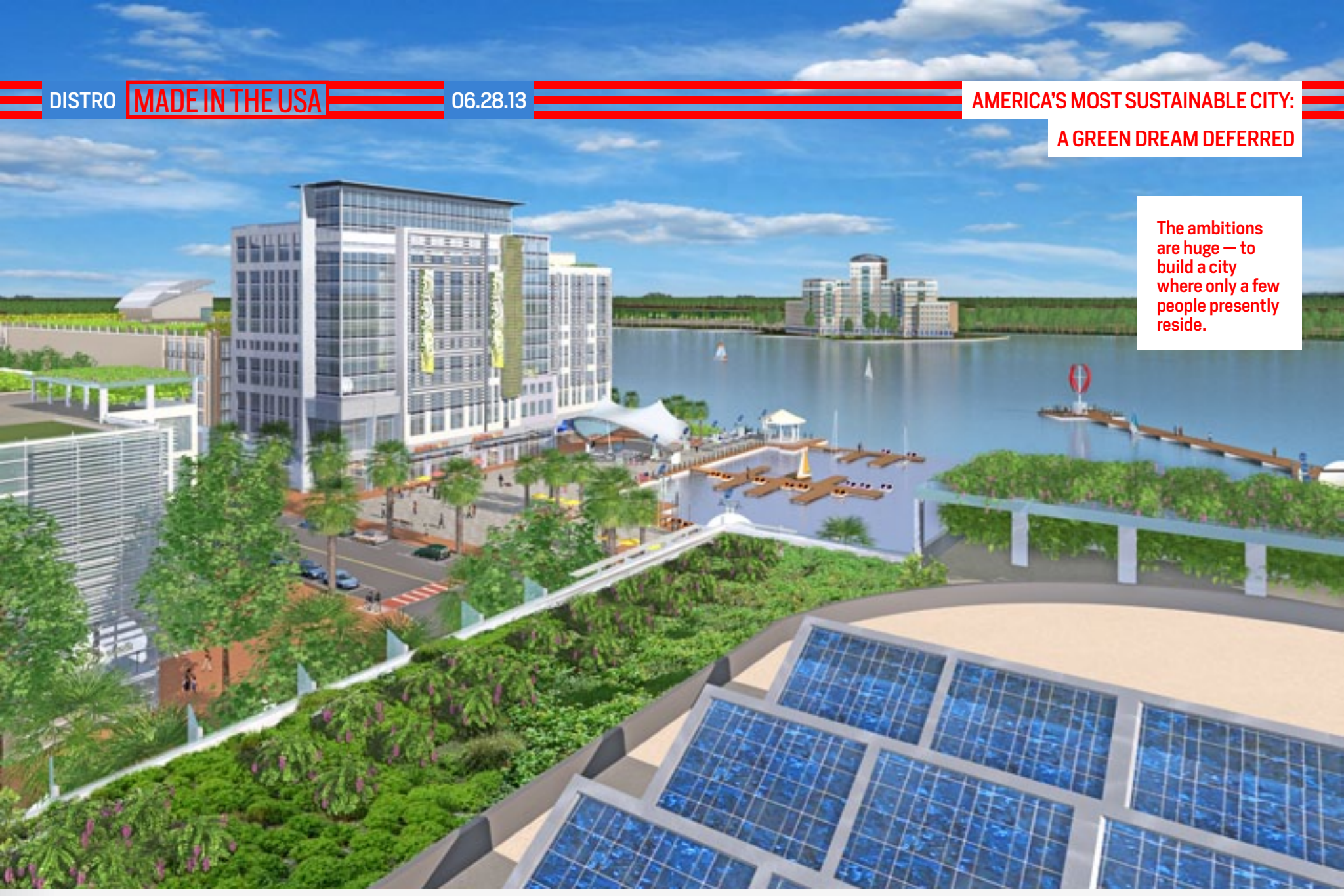
AMERICA'S MOST SUSTAINABLE CITY: A GREEN DREAM DEFERRED



Don't worry; the natives aren't going to be pushed out if the community comes together.

I'd been warned that no development had yet taken place, I'd still dreamt up something a little more modern than a renovated 1920s-era barn — a barn that I had a tough time believing was truly the property's office. Dodging a dusty pickup and a smattering of cattle that seemed unaware of modern traffic urbanities, I took a moment to enjoy the 89-degree heat and the piercing rays delivering it. For miles in either direction, I saw little but swampland, dense forest and plenty of bovines. I drove down a single-lane entrance that ran 2.5 miles. And, most frighteningly, I whisked past a sign that I was *certain* had advised me to enter at my own peril. It wasn't until Steve Smith greeted me with an outstretched hand that I

AMERICA'S MOST SUSTAINABLE CITY: A GREEN DREAM DEFERRED



The ambitions are huge — to build a city where only a few people presently reside.

was sure I'd been led to the right locale. "Welcome to the ranch," he said.

Smith, general manager and vice president of Babcock Ranch, did little to mask his true self. With denim jeans, a well-worn polo and a gentle drawl in his voice, he began to map out his vision of the ranch. "It means different things to different people," he noted, making reference to the unprecedented public-private partnership that Kitson & Partners struck with the state of Florida in 2005. Essentially, K&P agreed to facilitate the transfer of some 74,000 acres of Florida's interior back to the state for the sole purpose of preservation, while keeping around 18,000 available for use as a planned community. "Community," however, is apt to be viewed as an oversimplification. What's happening here is the foundation of an entire village — a destination that would include housing, schools and industry. Smith gestured to various colored squares on the latest version of the Babcock Ranch map — a sheet he affectionately called "the cartoon" — detailing proposed placements of everything from golf courses to a Field Research Site operated by Florida Gulf Coast University. Just down the road, Babcock Wilderness Adventures plans to expand its tourism initiative, further driving interest from outside visitors.

"It'll be like any town that started out as a cross in the road, and part of our mission is to create a place where people want to work, and want to live" Smith said. Along the northern border

of the community sits a 443-acre plot of fallow land, labeled "Solar Field," highlighted on "the cartoon" in blue to differentiate it from the Eco-Lodge to its immediate right and the turf fields below. That sole plot made this planned development different from any other the world has seen to date. Not only was it reserved for a monolithic array of solar panels designed to power an entire city, but it was also for something that proved an ethos. Kitson has been exceptionally bold about what he hopes Babcock Ranch will become: "A new city where innovation will abound — with planned state-of-the-art infrastructure to assure businesses and residents have full access to emerging technologies for communications, energy, education and transportation." It's a message that seems seared into Smith's mind, but I got the sense it was a far more pragmatic message in the past than it is today.

Steve Smith explaining where a proposed groundbreaking would occur.

THE COST OF CLEAN

For three years now, K&P (along with Florida Power & Light) has lobbied local lawmakers to approve the necessary price hikes that would enable a massive capital expenditure to occur. An expenditure that would lead to the outlay of hundreds of thousands of solar panels across an otherwise nondescript tract of land in one of the sunniest spots on Earth. Even when pressed, Smith wouldn't confirm the estimated cost of the 75-megawatt solar array. To give you an idea, the Tinton Falls Solar Farm in New Jersey employs some 85,000 ground-mounted solar panels across 100 acres of land. It cost $80 million to build. Closer to home, a 74-megawatt solar array was planned in 2010 to power some 12,000 homes across Walton County in Florida's panhandle; the $300 million price tag is still waiting to be paid.

Smith confessed that Florida Power & Light, a subsidiary of publicly traded NextEra Energy, would only need to charge each of its customers "pennies" extra per month in order to get the field going, but regulators have been adamantly opposed to increasing rates on a population that's irked by rising unemployment and sinking wages. In fact,

Limestone mining (in part) keeps the ranch profitable while development waits.

"YOU'VE GOT TO PAY A LOT TO ENJOY UNLIMITED FREE ENERGY."

the renewable-energy bill that includes the stipulation necessary to kick-start construction has yet to be placed back on the docket for 2013. So, what's a futuristic solar city to do without its solar grid? The same thing every other non-solar city does: turn to coal, oil and gas while it still can.

"As of now, we're hoping to be shovel-ready by early 2014," Smith uttered. "If we can't get the necessary approvals for the solar array by then, we'll use conventional energy until we can have it added."

You see, K&P has been sitting on a huge swath of land for nearly a decade — land that could be generating a profit as a full-fledged community. As Smith explained, it wasn't sold at a steep loss or simply walked away from during the crash of 2008 due solely to a trio of revenue-generating operations that its new owners were fortunate enough to acquire. Babcock Ranch — even in its present, undeveloped state — is bringing in enough cash to pay the bills. Between selling cattle for human consumption, raising turf for homes, parks and golf courses and mining limestone for use in highway construction, there's enough inflow to keep the grander dreams alive.

But it's no longer a critical part of the community. Smith confirmed that the recession "absolutely" impacted the initial concepts, and while the latest drawings haven't nixed the solar field, it's clear from our discussions that this city is happening with or without its token feature. The land's owners have waited for what feels like an eternity to break ground, and as Wall Street celebrates new highs and average home prices begin to rise, K&P senses that the market may finally be ready to accept a new town.

SHADOWS OVER SOLAR

One has to wonder, though: will the self-proclaimed City of Tomorrow ever see the dawning of a new day? As Smith sees it, K&P needs "the ideal political climate" in order to breathe life into a near-mythical 75-megawatt solar array. For a nation that's struggling to deal with some $17 trillion in debt, spending on proactive energy solutions is tough to justify. "It's honestly up in the air," Smith said with a hopeful tone. It's the same tone used when mentioning "next year" in the same sentence as "breaking ground," which — at this stage — is still far from certain. Crafting a new development in the current economy is no small task, but building a new town based around renewable energy is another challenge entirely. As Smith so aptly put it, "You've got to pay a lot to enjoy unlimited free energy." As it turns out, it seems that even the Sunshine State isn't quite ready to agree to pony up.

Presently, Florida has refused to join states like California and North Carolina in mandating that its utility companies provide at least a small portion of power through clean sources by a predetermined date. Lawmakers squashed former Governor Charlie Crist's 20 by 2020 plan, which would have "required

Today: farmland. Tomorrow: An eco-minded community of the future.

Florida power companies to produce 20 percent of their electricity from renewable energy sources by 2020." It's almost impossible to believe. With an abundance of sunlight, near-endless water sources and plenty of coastal wind, one has to wonder why Florida isn't champing at the bit to be a pioneer in the green-energy transition. Nancy Argenziano, former chairwoman of the Florida Public Service Commission, sees the answer as fairly cut and dry: "Money is stopping it. It has nothing to do with what is better for the country or the state."

California, New Jersey and even Colorado have long eclipsed Florida in terms of total megawatt production from solar harvesting, and regrettably, it doesn't appear that the situation is poised to change anytime soon. Despite the opening of the 25-megawatt, $150 million DeSoto Next Generation Solar Energy Center — a facility that even President Barack Obama flew down to see open in 2009 — Florida's solar hopes have dimmed significantly since. The aforesaid plant produces enough clean energy to power 3,000 homes out of Florida Power & Light's 4.5 million customers, but given that solar costs around 70 percent more than coal and gas, the math has weighed heavily on planned projects.

Babcock Ranch has the opportunity to shed a different kind of light on the ongoing battle to spend money we don't have on preserving a world that is in no way guaranteed to last. The public-private partnership proves that there is a desire to develop new cities in a sustainable way, but it also magnifies the red tape involved in making the associated parties agree to terms. Should groundbreaking begin with no clear ETA on the construction of a solar field, green advocates will no doubt be disappointed; but in the likely event that it plays out precisely as such, Smith is still hopeful that clean energy will electrify the ranch in time. Whether any other developer will try to replicate such a herculean chore, however, is altogether more doubtful. D

Darren holds the Guinness World Record for being the most prolific professional blogger on planet Earth. He's also an argonaut.

Made in America [L to R]: Mac Pro, Puget Peak and the Nexus Q.

AMERICAN REDUX: APPLE, MOTOROLA, LENOVO AND THE PULSE OF STATESIDE MANUFACTURING

With a few of tech's biggest brands bringing production back to US soil, devices like the new Mac Pro have become a symbol of an American resurgence

By Jamie Rigg

Google introduced the Nexus Q close to a year ago. It was an intriguing device with a standout design, but its high asking price and limited functionality meant it wasn't long before the Q was pulled from virtual shelves. A peculiar product and, perhaps, a cautionary tale, but the sphere was also interesting for another reason: it was manufactured in the USA. That credential is a rarity, and in the consumer technology business, almost an anomaly. It's fast becoming a lot more common, however, with some big players setting up a stateside manufacturing presence. Awareness of the potential advantages of doing so can only increase, and serve to debunk the myth that future technology can't be built on American soil.

After flirting with the idea, then committing to build a computer in the US, Apple chose its redesigned Mac Pro for assembly in the states. Lenovo has a PC production facility up and running in North Carolina, and Google-owned Motorola will be putting together its next flagship, the Moto X, in Texas. Time will tell whether other companies will follow suit, and to what extent, but if the arguments in favor of US manufacturing hold up, we could see the trend sustained in the long term, leading to many more gadgets bearing a US birthmark.

In recent history, many companies wouldn't even think to establish a manufacturing base in the US. As Hal Sirkin, senior partner and managing director at The Boston Consulting Group (BCG) explains, "They were just looking at where in China they would put it, as opposed to where in the world they would put it." Cheap labor, more favorable local regulations and tax incentives are just some of the reasons that companies moved operations or set up anew not only in China, but in other parts of Asia and South America as well. Times have definitely

AMERICAN REDUX:

APPLE, MOTOROLA, LENOVO AND THE PULSE OF STATESIDE MANUFACTURING

Motorola's new Fort Worth, Texas, facility for manufacturing the Moto X handset.

changed, however, and the US has, in some respects, become both a viable and sensible location for technology manufacturing. Some outfits have made it work before, of course, whether that's because it's made sense for their business, or because they pride themselves on being "Made in America."

Companies are now investing in US facilities for a host of reasons, but unsurprisingly, numbers play a large part. "Wages in China have been rising by 15 or 20 percent per year since 2000," notes Sirkin, who leads reshoring (the return of business operations to US soil) research at BCG. Shipping costs are also a factor. It stands to reason: the farther a product has to travel from where it's made to where it's sold, the bigger the transport bill. There's also a price to pay that can't be measured, but can be summarized using the old cliche "time is money." Consumer technology evolves rapidly. In the smartphone world, for example, no sooner has one flagship device launched, than another hits the market to supersede it, whether that's due to a faster processor, a higher-resolution screen or a cutting-edge design. It's the reason handset makers end up cannibalizing their own products yearly. Even with higher-value items like computers, which have a comparatively long lifespan, new processor architectures and other hardware upgrades make what came before them less-attractive purchases.

"Technology is, in essence, a perish-

EVERY WEEK THAT A GADGET SITS IN A CONTAINER CROSSING THE PACIFIC IS A WEEK OF COMPETITIVE EDGE LOST.

able good," as Sirkin puts it. Every week that a gadget sits in a container crossing the Pacific is a week of competitive edge lost. Fresh hardware is desirable hardware, and in the consumer technology business, speed of delivery is paramount. While it's hard to put a number next to a dollar sign and quantify the impact of shipping limbo, it's no less of a factor for companies making manufacturing decisions. Combined with rising production costs overseas, "the logistics become more important in the equation," says Sirkin. We've reached a point where, economically speaking, it's become practical for some companies to build in the US and take advantage of a shorter supply chain from the factory to end users.

Despite hailing from China, Lenovo is one of the most prominent tech companies of late to expand operations in the US. It added in-house manufacturing capabilities to its distribution center in North Carolina and started PC production in January. In June, its "grand opening" signaled that the facility had hit full working capacity, with production lines singing and 115 employees tending to them. As Jay Parker, president of Lenovo North America tells us, building computers in the US is part of the company's "global-local philosophy." With the Lenovo brand growing in the US, so too must investment in all parts of the business, and "manufacturing was really the next step." Although Parker admits labor rates are

Workers on the assembly line at Foxconn's factory in Shenzhen, China.

higher in the US compared with emerging markets, "that gap has closed over the years." Numbers out of China's National Bureau of Statistics show that manufacturing wages have risen by 71 percent since 2008. Chinese labor costs haven't increased enough to match the US yet, but it still made sense for Lenovo to begin assembling in the US, given the logistical savings and those all-important "competitive advantages."

A shorter delivery time is one of those advantages, Parker states, but he also cites being able to customize orders "later in the purchase cycle," whether that be hardware-based, or other services like etching names / logos onto products. That a computer is made in the US presents other business oppor-

"ANY TIME YOU HAVE AN INTERNATIONAL BOUNDARY BETWEEN YOU AND YOUR CONSUMER, THERE'S RISK," RANDALL SAYS.

tunities, as well. “We have customers that either desire ‘assembled in the US’ products, or in some cases, require it,” Parker adds, with the latter group referring to various government sectors.

Motorola’s SVP of Supply Chain and Operations, Mark Randall, expressed similar motivations regarding his company’s move to manufacture its Moto X flagship at a former Nokia plant in Texas. Again, the speed of delivery to American consumers was one of the drivers for Motorola. Interestingly, Randall was part of the Nokia team that originally set up the manufacturing base in Texas.

“Any time you have an international boundary between you and your consumer, there’s risk,” Randall says. “So, being able to ship product from our Texas facility and get it to our carrier partners, or even direct to our consumers, we believe is an efficient way of doing it.”

In addition, Randall mentioned product development is much easier when manufacturing is a local effort, saying, “Good things happen when you get the engineers and the ops guys working together.” It means product iterations are accelerated, and being closer to customers in general improves the company’s ability to judge demand and react to changing needs.

Manufacturing hardware in the US brings with it some clear benefits, and these can now be realized as the cost calculations make for a good business case. Companies do, of course, get the added bonus of having a “Made in America” product, a title that’s appealing to the US consumer when it pops up so infrequently. Whether that’s one

The ribbon-cutting ceremony for Lenovo’s new Whitsett, N.C., plant.

AMERICAN REDUX: APPLE, MOTOROLA, LENOVO AND THE PULSE OF STATESIDE MANUFACTURING

Lenovo's US-based facilities may go on to improve customer experience.

of the drivers of the manufacturing trend is inconclusive. Sirkin argues it's favorable, but not an agent of change, remarking, "They may get an image advantage because they are doing it, but I think they are making decisions based on the economics and what's right for their business." In Lenovo's case, we heard that it does afford the company more opportunities, and as Parker mentions, "We'll certainly communicate that wherever it's appropriate."

Motorola's Randall was clear in stating, "There was no PR strategy in this decision." But he adds that Google backed Motorola's plan to build the Moto X in the US, and that the team is excited to be doing it in America and challenging the norm.

Ricardo Hausmann, professor of economics at the Harvard Kennedy School, thinks PR has played a part in companies deciding to assemble products in the US. He makes an interesting point about Apple's connection with Foxconn and the negative press both have received over labor practices at the latter company's Chinese factories. A Fair Labor Association report in 2012 led to an agreement from Apple and Foxconn to adhere to legal codes governing the amount of time employees should work, as well addressing labor conditions at the factories and on-site dormitories. The report found some employees worked excessive amounts of overtime for questionable compensation, and some worked upwards of seven days straight without time off. Injuries and suicides at the plants have also damaged Apple's and Foxconn's reputations.

China's been consistently lowering its rare-earth export quotas, which somewhat restricts the movement of

manufacturing elsewhere. Coupled with issues of protecting and enforcing intellectual property rights, among other problems, Hausmann says Apple's decision to build the Mac Pro in the US is "also a message to the Chinese that if they play hardball, there are options." The American-made Mac was something Apple CEO Tim Cook was keen to draw attention to during his appearance at a Senate subcommittee hearing in May that looked at tax practices of multinational corporations, amid accusations of Apple's tax avoidance. In an effort to dispel the perception that the company is deliberately keeping cash outside the US, he mentioned the $100 million investment being made to build a Mac on American soil. Chad Moutray, chief economist at the National Association of Manufacturers (NAM), believes that with regard to image, "in many of these cases it looks good. There's certainly a lot of Americans who want us to make more in the US."

They may not have the global presence of Apple, Lenovo or Motorola, but there are a lot of companies in the US that manufacture computers here on a small scale. Formed in 2000, Puget Systems began building high-performance workstations, servers and consumer PCs for enthusiasts, with a specific focus on near-silent computers. For Founder and President Jon Bach, keeping everything in-house is essential to Puget's "quality first, price second" model. Accountability is a big factor, with manufacturing, sales and support all under the same roof to benefit pa-

"THERE'S WAY TOO MANY OPPORTUNITIES FOR CORNERS TO BE CUT WHEN YOU'RE NOT IN DIRECT CONTROL," BACH SAYS.

Based in the Seattle suburb of Auburn, Wash., Puget Systems builds high-performance workstations, servers and consumer PCs.

trons. "The customer just wants something that we know intimately well," says Bach.

That's not to say Puget didn't consider manufacturing elsewhere. "When you can buy a $200 chassis [in the US] for $35 [in China], yeah, you look very strongly at that," remarks Bach. Ultimately, having tasked a factory in China to make a chassis, the quality didn't meet Puget's standards despite several rounds of prototyping. "There's way too many opportunities for corners to be cut when you're not in direct control," Bach says.

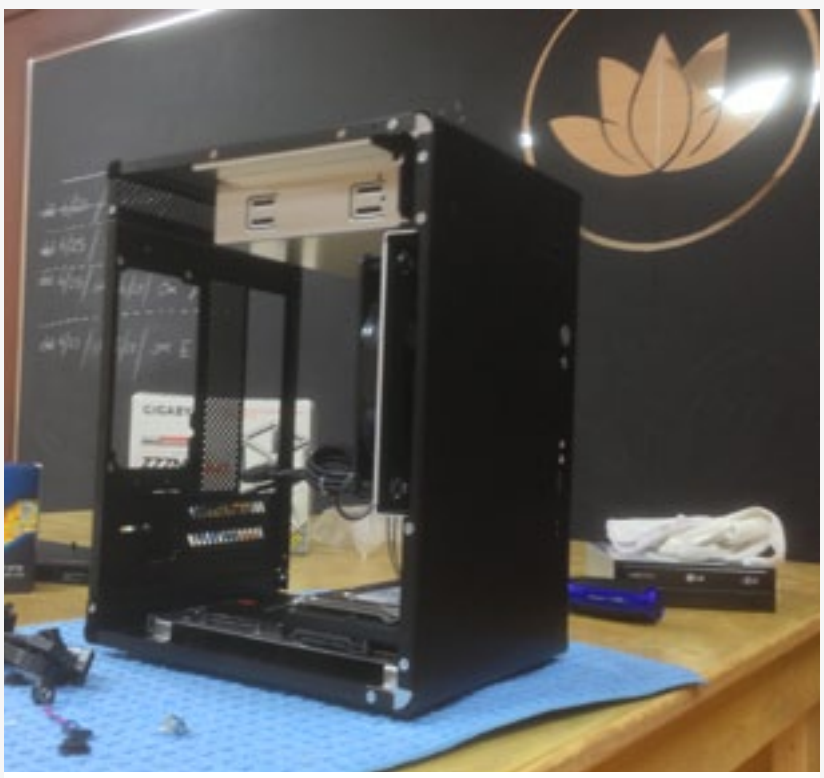
As a niche vendor, outsourcing wasn't viable due to the volume of imports required. The necessity of bulk orders sourced from China means it's harder to react to changes in consumer demand. With the rapidly evolving PC market, Bach says, "We have to keep that development cycle short."

Lotus Computer, a company formed in 2007 by Karel Felipe (founder and executive manager), is another US PC manufacturer building mid-range to higher-end rigs for a broader target market. For Felipe, manufacturing in the US wasn't the result of any cost-benefit analysis, but an ideological choice.

"Building everything here in the US is one of those things I really wanted to focus on, and I've been fortunate that we've been able to do that," Felipe says.

At one point, an investor approached Felipe suggesting he grow the company by moving assembly to China. "I said no … and of course that never happened. So that's one of my prouder moments," Felipe tells us. "As a result, we're smaller than we could be, but I'm much happier that way."

Felipe feels it's important to source as many components in the US as possible, and work with American companies wherever feasible. It's good for business too, he says, adding that being made in America is something that drives Lotus' computer sales. Consumers respond to his efforts, and he believes it's a competitive advantage. "People just want to buy domestic. It makes us feel good. It makes us feel like we're supporting our own country," Felipe says.



Lotus Computers in Orlando, Fla., champions the US-made concept and offers customers a chance to "buy domestic."

As small companies have been making it work, so too, are large ones, and if other companies find similar value in moving manufacturing to the US in order to better serve local residents, then it would make sense for the trend to continue. Moutray imagines leaner processes and the reduced labor cost difference between America and emerging markets will see the US become more competitive in the future. "The long-term prognosis for manufacturing is very bullish," he says. Sirkin also suggests that the plays of Apple, Lenovo and Motorola will cause others to assess whether they are manufacturing in the right places. A survey conducted by BCG in 2012 reported that 37 percent of 106 US manufacturers with over $1 billion in sales polled were considering moving at least some production from China to the US. Of the companies with revenues

NOT EVERYONE IS CONVINCED US MANUFACTURING IS MAKING A COMEBACK, MAINLY DUE TO THE LACK OF HARD NUMBERS TO SUPPORT THE NOTION.

of $10 billion or more, that figure increased to 48 percent.

When asked whether the trend will continue, Parker candidly answers, "I hope not, because we believe it's an advantage for us right now." However, he follows up by saying, "To the extent that we're a pioneer in bringing technology manufacturing back to the US … I hope that the trend continues." Parker also highlighted the value in bringing other parts of Lenovo's business to the US. The PC maker finished moving its customer support center for web and telesales from Bangalore, India, to North Carolina in mid-May, which resulted in a 25 percent increase in satisfaction ratings, Parker tells us. This is something the smaller PC companies that manufacture in the US were vocal about — keeping everything local to improve overall "customer experience."

Motorola's Randall agrees that we'll see more companies follow suit and establish manufacturing bases in the US. As an aside to more favorable labor rates, he says simply that outfits "wanna be in the markets where they sell their products." Randall is also of the camp that believes as more companies move back, a local supply chain for components will develop. Several companies like Intel,

Corning and Samsung already have some manufacturing plants in the US, but these components are often exported for the assembly phase.

It's unlikely we'll ever see a complex technology product for the mass market that's truly "Made in America" — the correct term is "assembled," as the vast number of components that are required to make a computer or similarly intricate hardware are sourced from all over the world, in most cases. Sirkin notes that because of this, manufacturing a product in any one country, the US or otherwise, is difficult.

One opinion holds that increased component manufacturing is a natural progression. Device manufacturers begin moving back to the US, which creates a greater need for locally sourced components to further reduce logistical costs for all involved. Others suggest the component supply chain is too global, and that won't change. Parker doesn't believe that worldwide component sourcing will change over time, and notes logistical costs have more of an impact on whole products than components. Hausmann also doesn't foresee a "reversal of globalization of the supply chain."

Not everyone is convinced US manufacturing is making a comeback, mainly due to the lack of hard numbers to support the notion. Talking to *The Atlantic*, Alan Tonelson of the US Business and Industry Council said, "Virtually no national- or global-level data show that American manufacturing is even continuing its recovery from reces-

IT'S TOO EARLY TO SAY DEFINITIVELY THAT COMPANIES WILL RUSH TO INSTALL OR RESHORE MANUFACTURING BASES IN THE US.

sion, much less stealing the march on Chinese and other foreign rivals." (He was speaking on US manufacturing in general, rather than commenting on the technology sector specifically.)

If companies increase investment in the US, there's also a chance China could do something to react. *The Washington Post* cites various experts that claim the Chinese government could address the shrinking labor cost gap through subsidies and other policies. Scott Paul, president of the Alliance for American Manufacturing, is quoted as saying, "I don't think you want to underestimate the willingness of China to protect its manufacturing."

It's too early to say definitively that companies will rush to install or reshore manufacturing bases in the US. There seem to be benefits in doing it, but there are also challenges. Obviously, companies

Google's short-lived Nexus Q proves being US-made doesn't guarantee success.

need the spare cash to invest in facilities in the US to begin with. Beyond that, Moutray mentions that for many manufacturers, US regulations, strict environmental and labor standards, as well as tax and tort laws can be a burden.

Motorola's Randall anticipates "managing the second-tier suppliers when they're not localized" to be a challenge, and also found an issue with hiring skilled labor for the plant in Texas. Flextronics, the company managing the Moto X plant, has had to bring experts in from overseas to fill those gaps. In agreement with Randall's experience, a 2011 report commissioned by The Manufacturing Institute found 83 percent of the 1,100 US manufacturing companies polled thought there were moderate or severe shortages in the availability of skilled production labor. Furthermore, nearly 75 percent said shortages were having an impact on their ability to produce and grow.

Randall doesn't expect a rapid resolution of the skills gap, and added that partnerships with educational institutions will be necessary to nurture local talent moving forward. The Obama administration also sees collaboration with businesses and communities as important for growing a skilled manufacturing labor pool. Tax reform, tax relief, easier access to loans and other financial incentives are also ways in which the president is attempting to drive growth in US manufacturing.

Lenovo admits that getting any new facility operational is a challenge, although ramping up production in North Carolina went smoothly. In contrast to Motorola's problems finding the right people, Parker says, "We were able to hire very high-quality talent very quickly. Much quicker than we thought we were going to be able to."

Whatever the challenges may be, more favorable economic factors, the pace of the industry and the perceived value of being near consumers has led some companies to bring manufacturing back to the US. If they are realizing the benefits, others may well end up following suit, or could face losing out if they don't. The Nexus Q wasn't exactly a poster child for US manufacturing, as it shows that being made in America doesn't necessarily equal a better product. However, the competitive advantages expected from either expanding to the US or reshoring could aid the consumer. Smaller companies have said they've experienced this already by being able to react faster to changes in demand, ship devices quicker, accelerate product development and ultimately, better understand their target market. Larger outfits cite some of these as reasons for investing in US manufacturing also. Therefore, if the trend continues, we might not only see the US as a whole prospering from local manufacturing, but also see quicker access to better products as a result. D

Jamie Rigg is a Contributing Editor at Engadget, and a total sucker for any tech he really doesn't need.

THE ENGADGET INTERVIEW

Michio Kaku

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Theoretical physicist Michio Kaku on building a Death Star and Silicon Valley brain drain

By Jason Hidalgo

MORNING LIGHT SHINES softly through a large glass window as a travel-weary Michio Kaku gamely musters a smile. Just a few hours removed from a cross-country flight from the East Coast, it doesn't take a rocket scientist to see that this physicist is plain tired. Then the camera starts rolling. In an instant, Kaku looks rejuvenated as he plays to his audience and waxes poetic about his favorite subject — science.

In the world occupied by nerds and techno geeks, theoretical physicist and futurist Kaku is akin to a rock star. Chalk it up to a flowing mane of pepper-gray locks and the fact he co-created string field theory (which tries to unravel the inner workings of the universe). These days, Kaku can mostly be found teaching at City College of New York where he holds the Henry Semat Chair and Professorship in theoretical physics. When he isn't teaching, Kaku still spends most of his extra time talking science, whether it be through his radio programs, best-selling books such as *Physics of the Future* or appearances on shows like *The Colbert Report*, where he recently enlightened Stephen Colbert about the dangers of sending Bruce Willis into space to blow up a deadly asteroid. As fun as it is for Kaku to talk physics, however, he also considers it a matter of survival.

"When I was a child, it was cool to be a scientist," Kaku says. "Remember Sputnik? When Sputnik went up, it just shocked the country and all of a sudden, physicists were superstars. It was your patriotic duty to learn nuclear physics to go head to head with the Russians because the future of the country depended on it. And then, we lost it — we lost all of that momentum."

"Even if we mortgage the next 100 years of generations of human beings, we would not have enough energy to build a Death Star."

It's a change that still stings for Kaku, which is why he finds himself jetlagged in places like Reno, Nev., trying to drum up interest in his favorite subject at local universities. Just like fellow science evangelists Neil deGrasse Tyson and Brian Greene, Kaku's goal is quite simple: help science get back its mojo and nurture the next wave of rock stars by engaging the public.

In a sense, it's kind of like having a walking, talking science encyclopedia that can carry a conversation. In fact, one of the best parts about picking Kaku's brain is that no question is too big or small. You certainly can ask him about more esoteric fare such as the

advantages and disadvantages between molecular and quantum computing. Yet even a seemingly silly question about the economic impact of the Death Star — a proposition the White House famously rejected with tongue firmly planted in cheek — earns a full response.

"If you take a pound of anything like a book and send it into orbit, it will cost $10,000," Kaku says. "To send something to the moon costs $100,000 a pound. Now think of a Death Star, which is the size of the moon, and you start to realize that it will bankrupt the United States of America. It would bankrupt the entire planet Earth. Even if we mortgage the next 100 years of generations of human beings, we would not have enough energy to build a Death Star."

SINGING FOR SCIENCE

One thing the United States certainly could have built, however, was the Superconducting Super Collider just south of Dallas, Texas. Kaku points to Europe's Large Hadron Collider, which garnered plenty of attention in the last year thanks to its role in the discovery of the Higgs boson — also dubbed "the god particle" much to the consternation of scientists. At a little over 54 miles in circumference, the Super Collider would have made the Large Hadron Collider look like "a pea shooter," Kaku says. Budget concerns, however, led to the Super Collider's cancellation in 1993. In recounting how the plug was pulled on the Super Collider project, Kaku does not mince words.

"Congress gave us a billion dollars to dig this gigantic hole; they canceled the machine [and] gave us a second billion dollars to fill up the hole," Kaku says. "I can't think of anything more stupid than that."

The cancellation of the project, as well as the reduced funding for scientific agencies such as NASA, is a far cry from the budgetary largess of the Cold War days. Back then, scientists only needed to utter one word — Russia — and Congress would open its checkbook, Kaku recounts. Those days are long gone, however, and scientists now have to "sing for their supper," he says. Part of that involves thrilling the public with technological and scientific innovations.

“Fifty percent of the top engineers and grunts doing the work in Silicon Valley are foreign-born and that is unsustainable.”

Kaku admits that advocating for science and research can be an uphill battle, especially at a time marked by a strong push for austerity in some circles. After all, the impact of cutbacks isn’t limited to high-profile projects. Another casualty of the decline in interest surrounding science and even math is the US education system, which Kaku describes as the most dysfunctional among advanced capitalist countries. Even with its issues, however, the United States still manages to produce Nobel Prize winners while staying at the forefront of the technology race. Kaku attributes this in large part to immigration and the influx of promising minds from other countries. Nevertheless, importing one’s geniuses can only last for so long.

“Fifty percent of the top engineers and grunts doing the work in Silicon Valley are foreign-born and that is unsustainable,” Kaku says. “One day, the brain drain will reverse — it’s starting to happen. Now top scientists are starting to go back to China and back to India. That’s why our education cannot continue to be one of the worst known to science.”

THE POST-SILICON ERA

A potential brain drain, however, is not the only threat to Silicon Valley, according to Kaku. Like many of the US industrial regions of yore, Silicon Valley could very well turn into the technology equivalent of a rust belt with the end of Moore’s law, he says. The law, which states a doubling in chip performance approximately every two years, essentially fueled all the wealth and prosperity tied to the current technology revolution. Kaku says that by 2020, computer chips could shrink to a layer as small as five atoms

across. Not only do electrons start leaking at that point, but also the heat generated could literally fry an egg, Kaku says. At that stage, Moore's law will essentially be tapped out — at least for silicon-based computing. Although technologies such as quantum, DNA and protein computing are seen as candidates for the post-silicon computing era, Kaku says none of those are ready for prime time.

"Quantum computers compute on individual atoms," Kaku says. "The problem there is atoms are so delicate that they very easily fall out of phase with each other. A passing truck ... or a wave going by a nearby ocean have enough vibratory energy to upset the vibration of atoms. So quantum computing is still further down the line."

Until the kinks with quantum computing are worked out, molecular computing could be a more viable solution, according to Kaku. Graphene, for example, is the strongest substance known to science — you can balance an elephant on a pencil, put it on a sheet of graphene and the material won't rip, he says. At the same time, graphene also conducts electricity, making it a good candidate for replacing silicon. The challenge, of course, is figuring out a way to mass-produce the material and finding ways to etch the circuitry in the graphene's carbon, Kaku says.

"I mean, it's criminal. You're not gonna put me in a capsule [and] send me to outer space backed up by the power of a cellphone. But that's what we did back in 1969."

The good news is that a lot can happen in a short amount of time given the amazing pace of advancement seen in technology. Take the chips that play music in greeting cards, for example. One of those chips has more computing power than all of the Allied forces of 1945, Kaku says. Hitler, Stalin, Churchill, Roosevelt — all of those men would have killed to acquire the computing power of a chip that some people just throw in the garbage, he says. Even the smartphones we use today have more computing power than

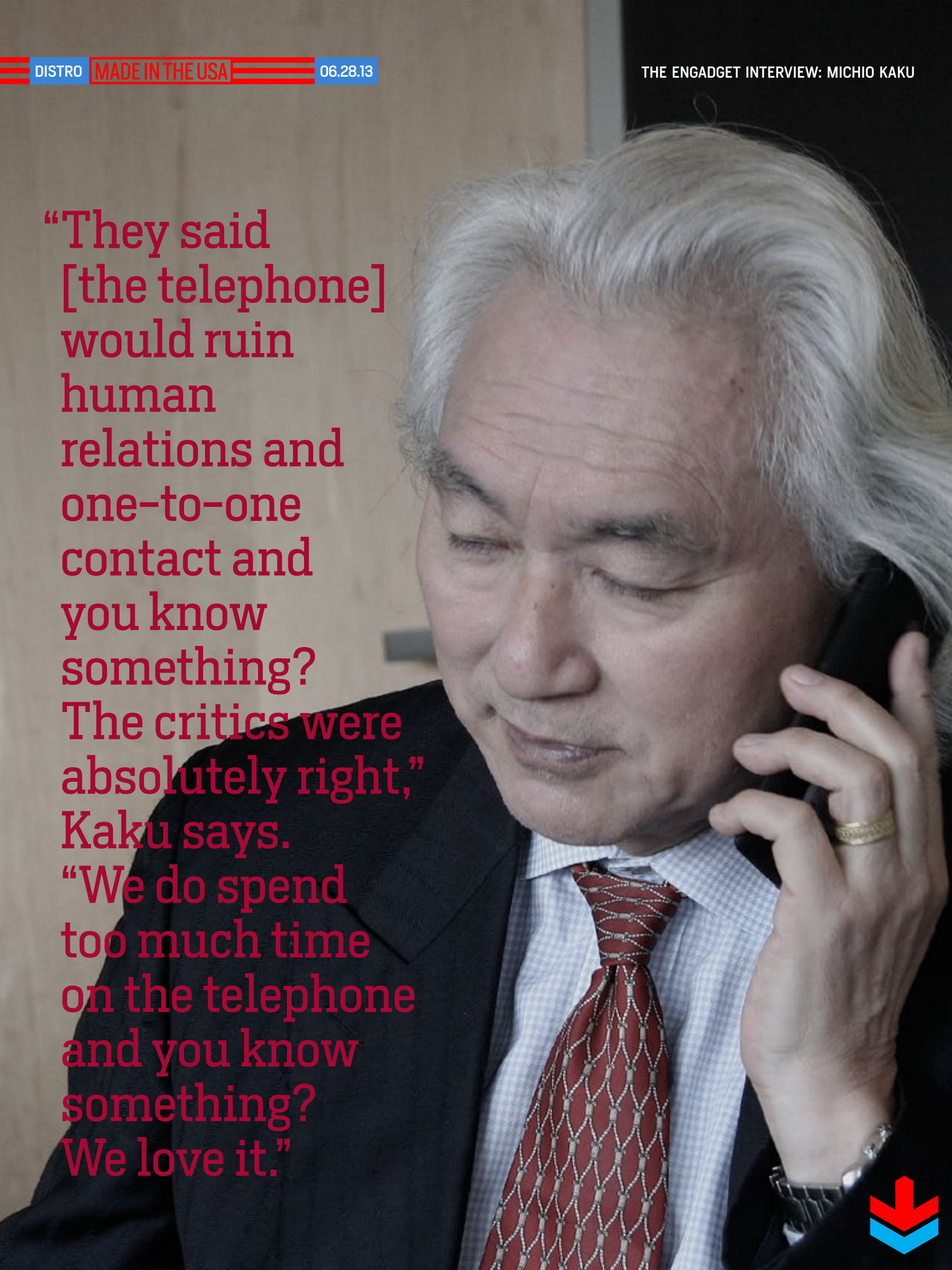
all of NASA did in 1969.

"Think about it; we sent off humans to outer space backed up by [technology less powerful than] a cellphone," says Kaku with amusement. "I mean, it's criminal. You're not gonna put me in a capsule [and] send me to outer space backed up by the power of a cellphone. But that's what we did back in 1969."

INTERNET EVERYWHERE

By 2020, computer chips will cost about a penny — about the same amount as scrap paper — Kaku says. At that point, computer power will be as ubiquitous as electricity. Once the internet reaches a similar point, the technology improvements could be incredible, he adds. Google's Project Glass may be getting a lot of buzz now, but Kaku says the wave of the future will be one step further in the form of internet-enabled contact lenses. Going online could literally be as simple as the blink of an eye — users would be able to download lectures in plain sight, identify people at a cocktail party or even get subtitled translations during real-time conversations. Even folks tasked with shopping for things like groceries or electronics could share their viewpoint with another person and get real-time feedback about the items they need to get. Such an advancement would open up a whole new dimension in communication, Kaku says, whether it be tourists visiting other countries or consumers bargaining with a merchant online. Even the advent of fiber-optic cables — which theoretically can transmit an almost limitless amount of information — means the bottlenecks in transmission are no longer the limitations of the cable itself, but the engineering and economics of compressing and encrypting all that data, he adds.

It's certainly an interesting development for a technology that started out as military weapon. The internet was not created so moms and dads could share photos of their kids, but in order to fight the final war against the Soviet Union, Kaku says. Even more astounding is the fact that the National Science Foundation essentially gave away this military weapon in 1989 after the Soviet bloc started crumbling.



"They said [the telephone] would ruin human relations and one-to-one contact and you know something? The critics were absolutely right," Kaku says. "We do spend too much time on the telephone and you know something? We love it."

"This is unparalleled in the history of humanity that a top secret military weapon was essentially given away for free," Kaku says.

Then again, even Kaku realizes the technology he loves so much can be a double-edged sword. Although one edge can cut against ignorance, poverty and disease, Kaku admits another edge can cut against people. When the telephone first came out, for example, it was denounced by critics in many newspaper editorials.

"They said [the telephone] would ruin human relations and one-to-one contact and you know something? The critics were absolutely right," Kaku says. "We do spend too much time on the telephone and you know something? We love it."

Some people also harped on electricity, which they said would cause fires and electrocute people. Critics got that right, too, Kaku says. The alternative, however, is almost unimaginable. When power goes out and cellular networks go down in an area, we're essentially sent back 150 years to the time of our great grandparents, he says. So although technology may come with a price, it's a price Kaku is willing to pay. As for concerns raised frequently about Big Brother, Kaku says he's more concerned about "Little Brother."

"It's pesky neighbors; it's scam artists; it's petty criminals who want to steal your credit card," Kaku says. "We can create the software to protect our privacy, but let's face it, all the young hot shots want to become the next [Mark] Zuckerberg. They don't want to spend all their time trying to protect the privacy of mom and dad; they want to become the next billionaire — and I don't blame them."

NEWTON OR EINSTEIN?

Like the debate between Coke and Pepsi for consumers, one question has raged fiercely among science nerds and geeks: Isaac Newton or Albert Einstein? For Kaku, the answer is so easy that even Einstein agrees, he says. Einstein took the foundation laid by Newton and created special and general relativity. Newton, on the other hand, had almost nothing to work with, but a little bit of algebra, he says.

"... If you want to see your Death Star, you have to wait."

"In fact, there was no mathematics by which Newton could solve his theories so ... he created a new branch of mathematics: calculus," Kaku says. "If you take a look at where they started and where they left, you begin to realize that Newton started with a world of darkness — a world where magic and witchcraft was the dominant thinking ... so comparing the two, I think, is no contest. I think Newton would be the greatest scientist who ever lived."

Looking back at the work done by both, however, makes it even more amazing to see how far science and technology have come today. Kaku points to the recent developments surrounding the Higgs boson, which he considers a significant achievement. The next big thing in physics? That would be dark matter, Kaku says, which scientists are now racing to discover.

A lot of today's talk about physics certainly sounds like science fiction, but as technology continues to advance, the lines between both will only get thinner. Even that *Star Wars* Death Star is possible given time. Just don't hold your breath, Kaku says. Physicists believe that there are advanced civilizations in space ranging from Type 1 to Type 3. Type 1 is planetary and can control the weather, earthquakes and volcanoes. Type 2 is stellar and can play with individual stars. Type 3 is galactic and possesses ships that can travel the galactic space lane.

"What would it take to create a Death Star?" Kaku says. "Probably a Type 2 civilization ... like in *Star Trek* that is spacefaring and has colonized nearby solar systems — a civilization that is about 5,000 years into the future. So if you want to see your Death Star, you have to wait." D

Jason Hidalgo is a Contributing Editor at Engadget who has won national and international awards for business and health reporting.

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VISUALIZED

ARCADE HEROES

RANDY MONTOYA, SANDIA NATIONAL LABORATORIES

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VISUALIZED

ARCADE HEROES

Last week, civilian and military bomb squads descended on Albuquerque, N.M. to wrangle robots and defuse potentially dangerous situations. It was time for the annual Robot Rodeo hosted by Sandia National Laboratories, a weeklong event where robotics industry representatives including iRobot and Remotec bring their latest day-saving bots to challenge and train law enforcement personnel and emergency responders. The technical competition included challenges such as "Pinball Wizard." The synopsis: teams have been alerted to a possible bomb at a local arcade, wired so that lights and sounds cannot be disabled during the search without detonating the device. Amidst the video game cacophony — which many of us know and love — teams from as far away as New Jersey competed against the clock to maneuver their bots, defuse the explosive devices and ultimately save the simulated day.

RANDY MONTOYA, SANDIA NATIONAL LABORATORIES

MICHAEL GOUGH

ADOBE'S VP OF EXPERIENCE DESIGN on digital sketching and six-fingered spies

What gadget do you depend on most?
My iPad. I've always been obsessed by drawing. I sketch all my meeting notes, and pretty much have to draw to tease out a coherent thought. About a year ago, I tried switching from pen and paper to doing all my drawing digitally. Now that I can use an active stylus with my tablet, I'm hooked. And to further create an even better drawing experience, we're working on our own "cloud-connected pen," we have named Project Mighty. I get really anxious when the battery dies and I can't sketch. Sometimes it feels like withdrawal.

Which do you look back upon most fondly?
My drawing table and all the great non-digital tools that I used with it. I loved my collection of circle templates, triangles and French curves. I had a particularly sensuous set of translucent ships curves and a couple of flexible curves that seemed, at the time, to offer infinite possibilities. And my green felt-lined case with my compasses. And Radiographs and mechanical pencils and electric erasers and eraser templates and little tape dots.

Did you know that Adrian Newey is still using analog drawing tools to design the aerodynamics of the world's most advanced racing cars?

Which company does the most to push the industry?
Apple gets the nod for the experience they enable. You'd think by now that other tech companies would get beyond thinking about the product or its capabilities alone to consider the experience holistically, like say an automobile company does, but not so far.

What is your operating system of choice?
iOS all the way.

What are your favorite gadget names?
I'm pretty happy with the project name for our digital ruler. We call it Napoleon because it's short and, uh, a ruler.

What are your least favorite?
Chumby.

"I'm pretty happy with the project name for our digital ruler. We call it Napoleon because it's short and, uh, a ruler."

The covetable Pogo 12.50 sailboat by Chantier Naval Structures.

Which app do you depend on most?
Paper by FiftyThree. It's a really simple drawing app that just draws the way I like to draw.

What traits do you most deplore in a smartphone?
Short battery life, too small text, embarrassing autocorrect-adjusted messages, inability to bounce off of concrete surfaces.

Which do you most admire?
Baseball score updates, ability to find restaurants and access to loved ones.

What is your idea of the perfect device?
I can no longer remember who I am paraphrasing, but I want the same thing from my devices that I want from my relationships. The perfect device should:

Understand my desires, anticipate my needs, foresee consequences, make connections, handle routine chores without asking, remind me when I need reminding, filter out the noise and find matching socks.

What is your earliest gadget memory?
"Six fingers, six fingers, man alive... how did I ever get along with five?" For those of you that aren't a half-century old, it's the marketing jingle for a really cheesy spy toy.

"I lust for an NKE Gyropilot with the carbon housing wrapped in a Chantier Naval Structures Pogo 12.50."

What technological advancement do you most admire?
It's a tie between the internet and my Sonicare toothbrush. Oh wait, definitely the sailboat.

Which do you most despise?
Any TV remote. They should all be burned. Don't the people designing them realize that all that interface should just be on the TV since that is what I am looking at?

What fault are you most tolerant of in a gadget?
I'll put up with all kinds of dysfunction if it's beautiful. I think my iPhone love has more to do with looks than function.

Which are you most intolerant of?
Dead batteries.

When has your smartphone been of the most help?
There have been numerous potential family emergencies that have been averted by phone use. I would go into detail, but my wife would find out and add to her list of child-endangerment accusations.

What device do you covet most?
Like thy neighbor's device? I lust for an NKE Gyropilot with the carbon housing wrapped in a Chantier Naval Structures Pogo 12.50.

If you could change one thing about your phone what would it be?
The maddening way it receives calls, emails and text messages from people that I am not interested in talking with.

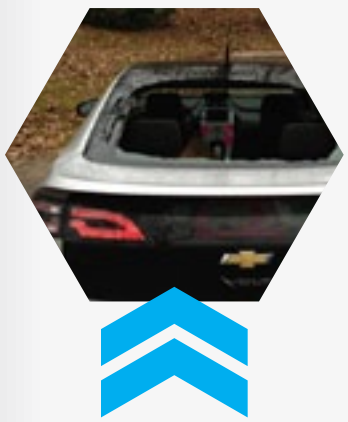
What does being connected mean to you?
It means having a sense of security and perhaps a touch of omniscience.

When are you least likely to reply to an email?
It's interesting. I used to avoid answering phone calls by using email. Now I avoid email by texting. So I am least likely to reply to an email whenever I feel like I can get away with not replying.

When did you last disconnect?
[A] 25th anniversary vacation in Belize. But only when we couldn't find a cell signal or WiFi. D

IN REAL LIFE is an ongoing feature where we talk about the gadgets, apps and toys we're using in real life.

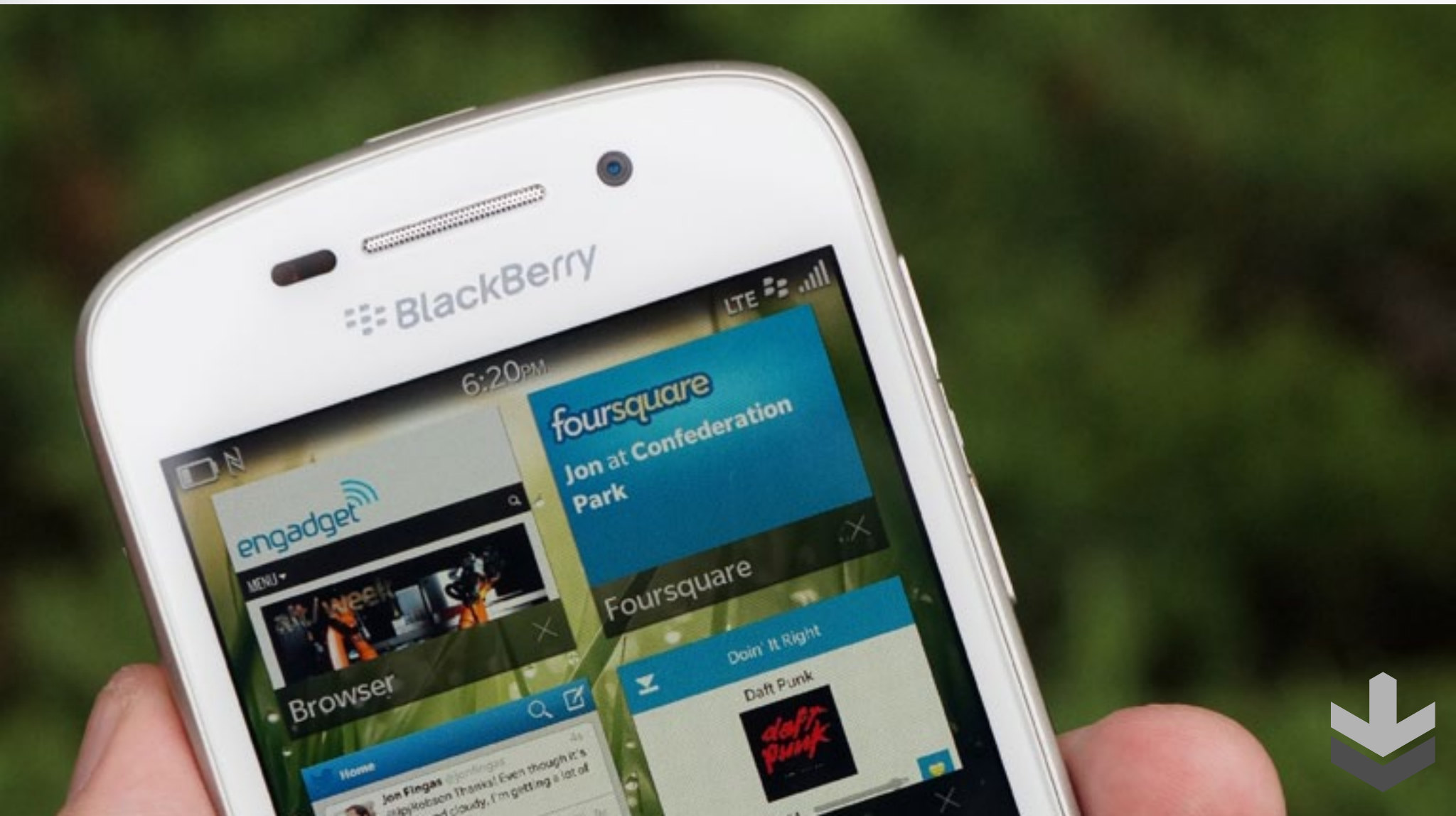
BLACKBERRY Q10



Chevy Volt

TO ME, THE REAL litmus test of BlackBerry's revival was always going to come with the launch of the Q10 in Canada: if a higher-end QWERTY BlackBerry can succeed on the company's home turf, it just might stand a chance elsewhere. It's for that reason that I've been trying the Q10 for myself — and I've even managed to use it on BlackBerry's original carrier, Rogers. Would a few weeks of Q10 use feel like a homecoming, or remind me how far the mighty have fallen?

I'm quite happy with the basic experience, which gives me some confidence in BlackBerry's future. While I believe that it's faster to type on a good touchscreen keyboard than the hardware variety — it's easier to glide from letter to letter — I've become quite comfortable with the Q10's keys and compact body. BlackBerry 10 feels tailor-made for a blend of keyboard and touch input: the instant type-to-search is convenient, and the (relatively) small space of a 3.1-inch screen makes it easy to perform swipe gestures with one hand. I find myself enjoying the rear camera, too. It took a while to settle in with BlackBerry's odd drag-to-focus interface, but the Q10's 8-megapixel primary shooter pro-

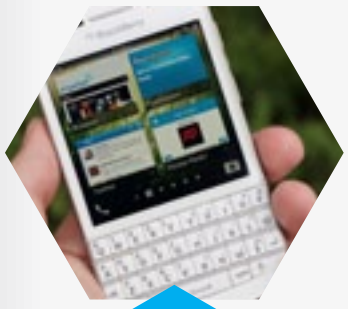


duces the right amounts of sharpness and color accuracy to please a mobile shutterbug like myself, at least in typical daylight conditions.

When Rogers' Q10 model has the rare advantage of an extra LTE band (2600MHz) at its disposal, you'd expect a better-than-usual cellular experience. I haven't noticed the difference around Ottawa, however. Speeds are similar to other devices at an average of 14 Mbps down and 3 Mbps up, and the coverage hasn't noticeably improved — not that this was a problem to start with, as the network is usually strong in the areas I visit. As for preloaded apps? Examples like Anytime TV exist, but they're rarer and less intrusive than they can be on Rogers' Android and Windows Phone devices.

With all these positives in mind, I'd still have a hard time making the leap to the Q10 due to the terrible battery life I've seen under heavy loads. While Tim got through a full day of strenuous use on AT&T, my Rogers example keels over in four hours of frequent (though not constant) internet and camera activity. This is despite keeping the number of running apps down to three or four at most. When even the power-hungry Sony Xperia ZL can last for longer, you know there's a problem. It's difficult to tell whether the short runtime is the result of switching Canadian LTE frequencies or just my particular usage patterns, but either way, it sours an otherwise solid phone. — *Jon Fingas*

CHEVY VOLT



Blackberry Q10

WHEN MY WIFE told me the company she works for was going to replace her Impala with a Chevy Volt, I couldn't contain my excitement. Finally, an EV in my life! When we went to pick up the car, she expressed concern about driving something so different. I tried to calm her down by saying, "This is just a gadget. The biggest gadget you will ever have, but a gadget nonetheless." She laughed and nodded.

The new Volt had plenty of new features compared to the Impala. It had a touchscreen, capacitive controls, animations and iPod integration, but more importantly: a power plug. We started charging the car nightly and learning to drive carefully to extend the mileage obtained per charge. Being power-efficient became a fun game.

Then the problems started. One day my wife came home with a rental. "What happened?" I asked.

Well, the radiator had cracked. That was not a big deal, as the dealer replaced the component and off we went. Then the second issue: the back window broke when closing the door, leaving tiny pieces of glass behind. It took several weeks to get that replaced, because the part was not even available. Then we lost power in the house. The electric company came and realized the power meter had melted (luckily, it didn't cause a fire). The plug we had been using for the car had been wired incorrectly and melted half of the meter. We had an electrician fix that problem and then a Level 2 Watt Station was installed.

Recently, my wife returned her Volt, because she's required to exchange her car after she reaches a certain mileage. Once again, she picked the Volt. We like to think many of those problems we had with the first Volt were just a learning experience. Part of a process. We believe we are helping the environment by using this car, that we are promoting the development of this important technology. And besides all the issues we have had, we love driving a Volt, trying to get the most out of the battery, seeing the animations on the screens and talking to strangers who approach us just because we have an electric car and they also want to learn about it. — *Jose Andrade*

The week that was in 140 characters or less

Terminal Limits, Scalable Applause and AutoRip Anxiety

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@dannysullivan

Breaking: Tom Hanks to play Edward Snowden in reboot of The Terminal.

@rossrubin
Nook Home; You know you want it to take over your phone.

@samfbiddle
Magna Carta holy grail Samsung ad could not be more devoid of soul

@SethR
Biggest applause of the day at #Build is for automatically scaling resolution when Windows 8.1 devices are hooked up to external monitors

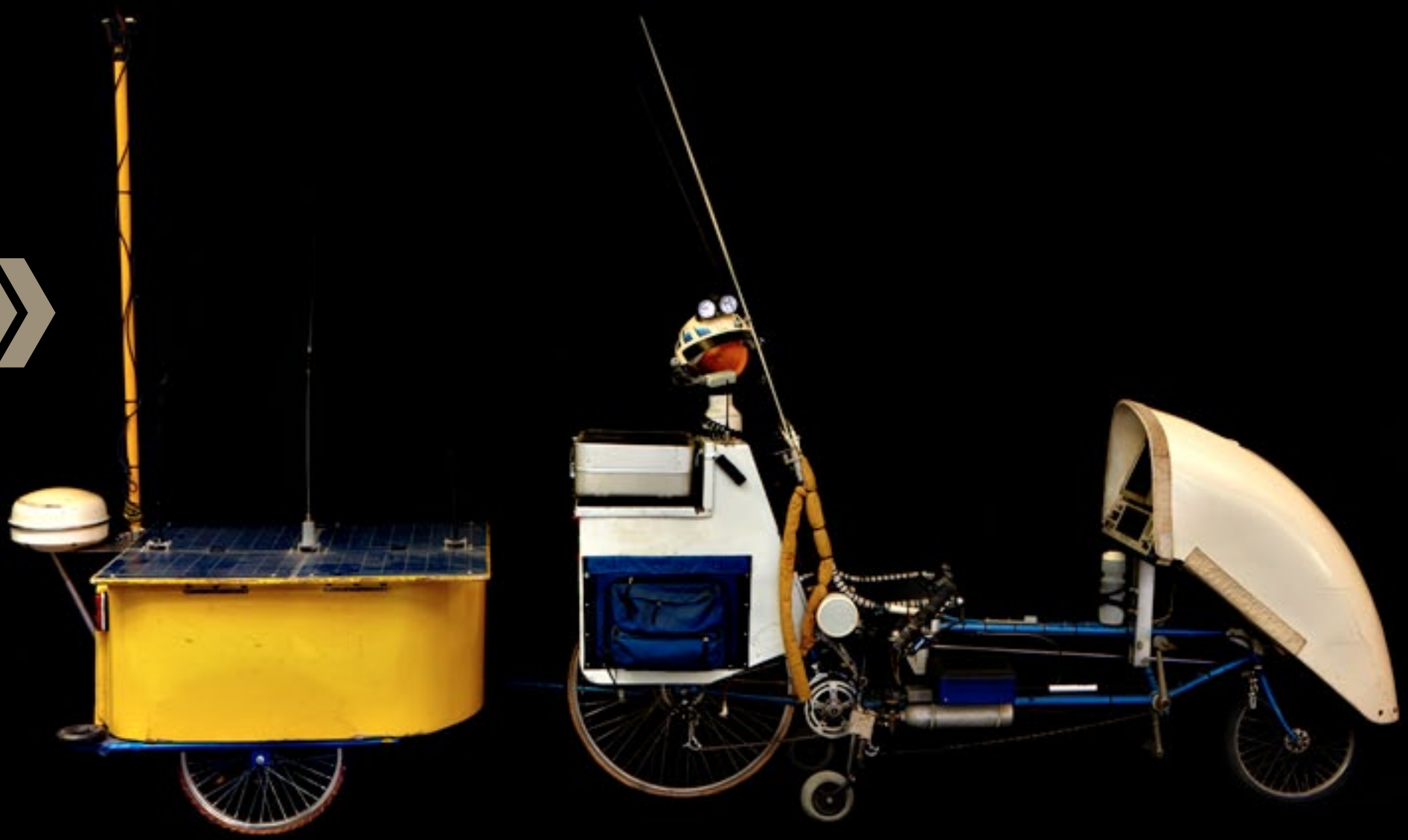
@danielcooper

Scared to sign into Amazon, as I only ever buy opera / musicals CDs for my Mum.

THE STRIP | BY BOX BROWN

WHAT IS THIS?

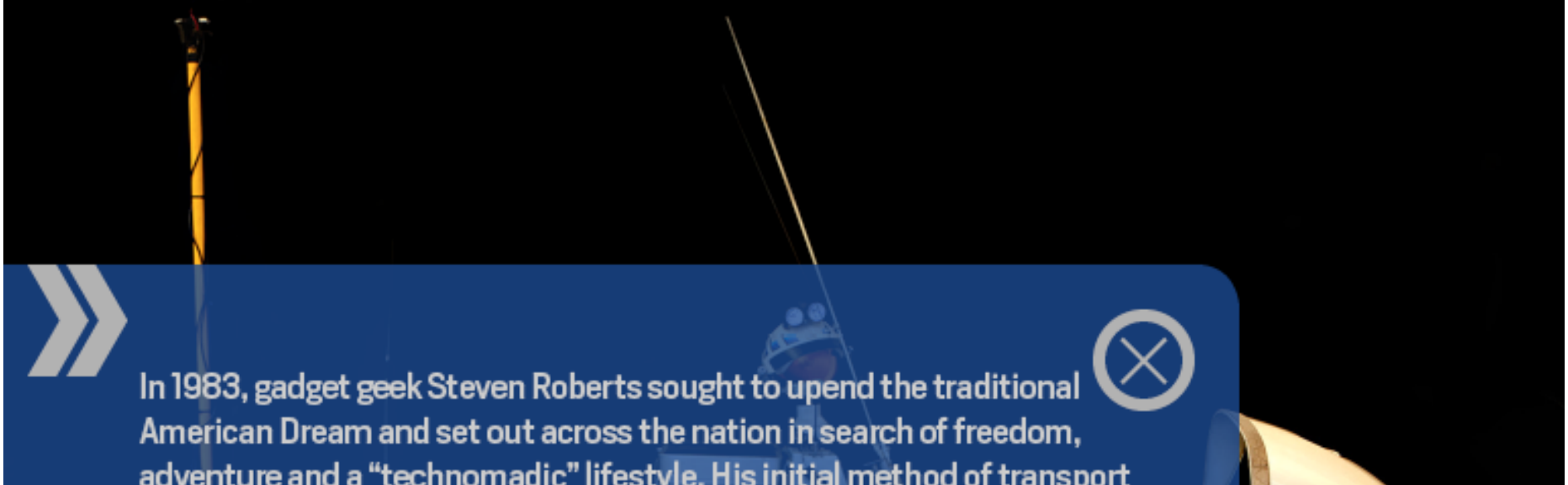
TOUCH TO FIND OUT



Follow the adventure

MARK RICHARDS / COURTESY OF THE COMPUTER HISTORY MUSEUM (BIKE);
NOMADIC RESEARCH LABS (INSET)

BEHEMOTH



In 1983, gadget geek Steven Roberts sought to upend the traditional American Dream and set out across the nation in search of freedom, adventure and a "technomadic" lifestyle. His initial method of transport was a custom-made recumbent bicycle called the Winnebiko. Armed with solar power and a modicum of electronic gear, he accessed the newly available online network and supported his journey by writing and consulting on the go. His tale was electric and lit up the media. By 1989 he had funding and a team to help develop his most high-tech chariot to date, BEHEMOTH (Big Electronic Human-Energized Machine ... Only Too Heavy). The 580-pound setup was loaded with a Mac GUI, handlebar keyboard, stereo, satellite terminal, speech recognition and more. By 1993, Roberts was traveling by trailer, hauling BEHEMOTH to speaking engagements, with the occasional bike trip. His technomadic lifestyle continues today, on a more fluid surface and aboard a sailboat named Nomadness.

Roberts on his ham radio, an early gadget passion.

Follow the adventure

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